Annals
of the
Missouri Botanical Garden

Vol. 12 SEPTEMBER, 1925 No. 3

THE THELEPHORACEAE OF NORTH AMERICA. XIV[1]

EDWARD ANGUS BURT

Mycologist and Librarian to the Missouri Botanical Garden
Professor in the Henry Shaw School of Botany of
Washington University

PENIOPHORA

Peniophora Cooke, Grevillea **8**: 20. *pl. 122–125.* 1879; Sacc. Syll. Fung. **6**: 640. 1888; Massee, Linn. Soc. Bot. Jour. **25**: 140. *pl. 47, f. 14–19.* 1889; Karsten, Finska Vet.-Soc. Bidrag Natur och Folk **48**: 421. 1889; Engl. & Prantl, Nat. Pflanzenfam. (**1**:1**): 119. 1898; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 372. 1913; Burt, Mo. Bot. Gard. Ann. **1**: 191, 193, 198. 1914; Rea, Brit. Basid. 687. 1922.—*Kneiffia* (in part) Bresadola, Ann. Myc. **1**: 99. 1903.—Includes *Gloeopeniophora* v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **116**: 815. 1907. —Includes in part *Gloeocystidium* Karsten, Finska Vet.-Soc. Bidrag Natur och Folk **48**: 429. 1889.

Fructifications waxy, coriaceous, cartilaginous, membranaceous, submembranaceous, floccose, or filamentous, always resupinate, effused, even; simple basidia with 2–4 white spores; cystidia incrusted or not incrusted, present in the hymenium and often more or less immersed in the substance; substance variously differentiated in some species but not containing colored, stellate organs.—Distinguished from *Corticium* by the presence of cystidia.

The North American species of *Peniophora* are here arranged in five groups according to the color of the substance of the fructification, nature of the cystidia, and presence or absence of gloeocystidia. These groups are further subdivided to such degree as

[1] Issued February 18, 1926.

seems desirable by color of hymenium, adnation to substratum, and incrustation of cystidia or of hyphae, into minor groups of so few species that the characters of the component species of any group within which a species seems to belong, may all be considered in determining the probable species of the specimen in course of identification. An appalling amount of time and labor has been required for the accumulation from sectional preparations of the structural characters of the individual specimens of species of *Peniophora* listed in this work. The older descriptions of resupinate Hymenomycetes were based on so few definite characters that a specimen in hand might seem to be referable equally well to more than one published species, or that several specimens in hand and certainly different specifically might all seem referable to one species, judging from its published description. However, by the addition of the knowledge of the definite features of structure characteristic of species, determining additional characters have been found for so many species that the specific taxonomy of the large genus *Peniophora* in North America becomes practicable. In the use of this work sectional preparations of fertile specimens are necessary.

Of the 120 species of *Peniophora* described herein, 36 occur in Europe as well as in North America and 11 others have been already recognized as North American species. The remaining 73 species are unlike those which the writer has been able to recognize among the known species from other regions of the world and have therefore to be described as new. It is quite probable that nearly all of these 73 species will bear the test of study by foreign mycologists and be demonstrated eventually to be really new, for most of them are of local occurrence, known from a single collection and distributed with surprising uniformity over the great area of North America which has in its different regions such great differences in temperature, moisture, altitude, and composition of its forests that the conditions are ideal for the origin and survival of species of merely local distribution. This is in accord with the fact that 9 of our new species occur in more than one state and that others occur as follows:—7 from Louisiana; 4 each from New York, British Columbia, Washington, Mexico, and Jamaica; 3 each from Vermont, Idaho, Oregon,

and Texas; 2 each from Canada, New Hampshire, Alabama, Florida, Colorado, and Porto Rico; and 1 each from Virginia, Georgia, Kentucky, Montana, Alaska, California, New Mexico, Nicaragua, Cuba, and Bermuda.

It might be well for American students who use this work for the determination of their gatherings of *Peniophora* to concentrate their attention in first attempts on the characters of the species of wide distribution and on such of the new species as are local in their respective regions.

Mycologists, with special knowledge of the *Thelephoraceae* in every nation, work not only to make better known the fungous floras of their own countries, but also to determine which of their species occur in other countries. As an aid to such study in the future and for checking my work, there is here given the following list of foreign species of *Peniophora*, not known to me except from the more or less satisfactory published descriptions, viz., *Peniophora abietis*, *P. amaniensis*, *P. atro-cinerea*, *P. avellanea*, *P. bambusicola*, *P. carneola*, *P. Cheesmanii*, *P. cineracea*, *P. citrina*, *P. coccinea*, *P. Coffeae*, *P. convolvens*, *P. Corsica*, *P. crustosa*, *P. diffissa*, *P. discoidea*, *P. Dussii*, *P. fimbriata*, *P. gigaspora*, *P. habgallae*, *P. leprosa*, *P. lilacea*, *P. Martelliana*, *P. mimica*, *P. ochroleuca*, *P. orphanella*, *P. pirina*, *P. rimicola*, *P. rufomarginata*, *P. sordidella*, *P. sororia*, *P. sparsa*, *P. subavellanea*, *P. subglebulosa*, *P. sublaevis*, *P. subtilis*, *P. tomentella*, *P. tremelloidea*, and *P. vermicularis*. It is probable that most of these species are of local interest but I should like to have been sure that I have not redescribed any of them as new American species. Much time and effort have been required to make this list as small as it is.

Key to Arrangement of the Species

I. Substance not colored, with the usual cystidia, no gloeocystidia.
  1. Hymenium white or whitish.
    *At least small pieces separable when moistened.
      a. Cystidia incrusted *1–7*
      b. Cystidia not incrusted *8, 9*
    **Closely adnate, not separable.
      a. Antler-shaped paraphyses not present.
        †Cystidia incrusted *10–13*
        ††Cystidia rough-walled or denticulate *14, 15*
        †††Cystidia not incrusted, even *16–24*
      b. Antler-shaped paraphyses present *25–27*

2. Hymenium colored and the subhymenium also in a few species.
*Closely adnate, not separable.
a. Cystidia not incrusted.
†Fructification not stratose 28–30
††Fructification becoming stratose 31, 32
b. Cystidia incrusted 33–38
**At least small pieces separable when moistened.
a. Cystidia incrusted.
†Hyphae incrusted 39–44
††Hyphae not incrusted or not obviously incrusted 45–52
b. Cystidia not incrusted.
†Hyphae incrusted 53–56
††Hyphae not incrusted or not obviously incrusted 57–61

II. Substance not colored almost without exception, cystidia very long, cylindric, thick-walled, not normally incrusted, often visible through whole thickness of the fructification, no gloeocystidia—the *P. glebulosa* group 62–68

III. Substance not colored, gloeocystidia present as well as cystidia—the gloeocystidial group.
1. At least small pieces separable when moistened.
*Cystidia incrusted.
†Some cystidia 40–100 × 20–50 μ 69
††Cystidia of the usual size 70–79
**Cystidia not incrusted 80–83
2. Closely adnate, not separable 84–90, 111

IV. Substance yellow or yellowish rather than dark-colored and often bleached by potassium hydrate solution.
1. At least small pieces separable when moistened 91–97
2. Closely adnate, not separable 98–100

V. Substance more or less dark-colored, the dark color retained in preparations stained with eosin. Gloeocystidia sometimes present.
1. Fructification stratose 101–102
2. Fructification not stratose.
*At least small pieces separable when moistened. Compare also resupinate *Stereum ferreum* 103–110
**Closely adnate, not separable 111–120
(Including as 117–120 the *P. cinerea* group with opaque zone next to substratum and the largest cystidia on this zone.)

1. Peniophora gigantea (Fr.) Massee, Linn. Soc. Bot. Jour. **25**: 142. Je. 1889; Karsten, Finska Vet.-Soc. Bidrag Natur och Folk **48**: 422. 1889; Bresadola, I. R. Accad. Agiati Atti III. **3**: 113. 1897; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 401. 1913; Rea, Brit. Basid. 693. 1922.

Thelephora gigantea Fries, Obs. Myc. **1**: 152. 1815; Syst. Myc. **1**: 448. 1821.—*Corticium giganteum* Fries, Epicr. 559. 1838; Hym. Eur. 648. 1874; Peck, N. Y. State Mus. Rept. **28**: 52. 1876; Sacc. Syll. Fung. **6**: 610. 1888.

Illustrations: Fries, Icones Hym. **2**: *pl. 197, f. 3.*

Fructifications broadly effused, hyaline, white, waxy, swelling when moist and separable from substratum, when dry horn-like and parchment-like, the hymenium even, pale pinkish buff, pale olive-buff, or pallid mouse-gray in the herbarium, the margin white, fibrillose, radiating, sometimes becoming free and curling away from the substratum in drying; in section 100–500 μ thick, not colored, with the broad layer towards the substratum composed of crowded and more or less longitudinally arranged hyphae so highly gelatinously modified that only the lumen and cell contents usually show distinctly in preparations, about 3–5 μ in diameter; cystidia incrusted, about 40–50 × 8–12 μ, confined to the hymenium or a zone up to 100 μ broad; spores hyaline, even, about 4½–5 × 2½–3 μ as found in preparations.

Fructifications 3–30 cm. in diameter.

On bark and wood of dead conifers such as *Pinus*, *Abies*, and *Tsuga*. In Europe, Canada to Texas, westward to the Pacific states, in Mexico, and in Japan. June to January. Widely distributed and abundant locally.

P. gigantea may usually be recognized at sight by its occurrence on coniferous bark in large, whitish or pinkish buff fructifications of cartilaginous structure, separable from the substratum and more or less curling away from it in drying.

Specimens examined:

Exsiccati: Bartholomew, Fungi Col., 2422, 4242, 4622; Ellis, N. Am. Fungi, 410; Krieger, Fungi Sax., 117; Ravenel, Fungi Am., 452; Fungi Car. **2**: 38; Romell, Fungi Scand., 34; Sydow, Myc. Germ., 553; de Thümen, Myc. Univ., 909.

Finland: Mustiala, *P. A. Karsten*, in Myc. Univ., 909.

Sweden: *L. Romell, 97, 98, 349*, and in Romell, Fung. Scand., 34.

Germany: Brandenburg, *H. Sydow*, in Sydow, Myc. Germ., 553; Königstein, *W. Krieger*, in Krieger, Fungi Sax., 117.

Austria: Karwendel, Tirol, *V. Litschauer;* Stubai, Tirol, *V. Litschauer.*

Italy: Trient, *G. Bresadola.*

France: *Fautrey*, comm. by Lloyd Herb., 4354; Jura, *N. Patouillard* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55907).

Canada: Montreal, on timbers in a mill, *R. J. Blair, 337*, comm. by L. O. Overholts, 4113 (in Mo. Bot. Gard. Herb., 55632); Belleville, Ontario, *J. Macoun, 253;* Ottawa, *J. Macoun, 48.*

New Hampshire: Chocorua, *W. G. Farlow, 32.*

Massachusetts: Fall River, on floor beams in a mill, *W. H. Snell* (in Mo. Bot. Gard. Herb., 57379).

New York: ex herb. Torrey, 112 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61437); Beaver River, Adirondacks, *G. F. Atkinson, 4606;* Mechanicville, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55575).

New Jersey: Newfield, *J. B. Ellis*, in Ellis, N. Am. Fungi, 410.

Pennsylvania: Adelaide, on cross ties, *H. v. Schrenk* (in Mo. Bot. Gard. Herb., 6685); State College, *L. O. Overholts, 4810* (in Mo. Bot. Gard. Herb., 56124).

Maryland: Takoma Park, *C. L. Shear, 1266*, and in Bartholomew, Fungi Col., 2422.

Virginia: Rio, *F. Gravatt* (in Mo. Bot. Gard. Herb., 44042).

North Carolina: Biltmore, *E. Bartholomew, 5658* (in Mo. Bot. Gard. Herb., 44216), and in Bartholomew, Fungi Col., 4622; Chapel Hill, *J. N. Couch*, comm. by Univ. N. C. Herb., 4306 (in Mo. Bot. Gard. Herb., 57422).

South Carolina: *H. W. Ravenel*, in Ravenel, Fungi Car. **2**: 38; Aiken, *H. W. Ravenel*, in Ravenel, Fungi Am., 452.

Georgia: Brunswick, *H. v. Schrenk* (in Mo. Bot. Gard. Herb., 43887).

Florida: *W. W. Calkins, 63* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61446).

Louisiana: Shreveport, *E. Bartholomew*, in Bartholomew, Fungi Col., 4242, and (in Mo. Bot. Gard. Herb., 4943).

Texas: Houston, *H. W. Ravenel, 221;* Quitman, *W. H. Long, 12074*, and comm. by C. J. Humphrey, 2552 (in Mo. Bot. Gard. Herb., 55046 and 9804 respectively); Somerville, *H. v. Schrenk* (in Mo. Bot. Gard. Herb., 42884).

Michigan: Bay City, *J. R. Weir, 301* (in Mo. Bot. Gard. Herb., 20143).

Wisconsin: Madison, on log of *Pinus Taeda* in timber yard, *M. C. Jensen*, comm. by C. J. Humphrey, 719 (in Mo. Bot. Gard. Herb., 42729).

Minnesota: Cass Lake, *J. R. Weir, 394* (in Mo. Bot. Gard. Herb., 13981); St. Louis River, *J. C. Arthur, L. H. Bailey & E. W. D. Holway, 175 St.* (in Mo. Bot. Gard. Herb., 4821).

Arkansas: Texarkana, on cross ties, *H. v. Schrenk* (in Mo. Bot. Gard. Herb., 56378).

Colorado: Tolland, *L. O. Overholts, 1834* (in Mo. Bot. Gard. Herb., 54879).

Montana: Libby, *E. E. Hubert*, comm. by J. R. Weir, 11449 (in Mo. Bot. Gard. Herb., 63276); Rockhill, *E. E. Hubert*, comm. by J. R. Weir, 11966, 11979, 11984 (in Mo. Bot. Gard. Herb., 63336–8).

Idaho: Coolin, *J. R. Weir, 11097*, comm. by U. S. Dept. Agr., Path. Myc. Coll., 1335 (in Mo. Bot. Gard. Herb., 62988); Priest River, *J. R. Weir, 80* (in Burt Herb.) and *5825, 6331, 11985, 12018, 14938* (in Mo. Bot. Gard. Herb., 58289, 55950, 63350, 63374, and 56800 respectively); Santa, *E. E. Hubert*, comm. by J. R. Weir, 11603 (in Mo. Bot. Gard. Herb., 63304).

British Columbia: Hastings, *J. Macoun, 24.*

New Mexico: Gila National Forest, *G. G. Hedgcock & W. H. Long*, comm. by C. J. Humphrey, 2524 (in Mo. Bot. Gard. Herb., 21669).

Mexico: Orizaba, Nuevo, *W. A. & E. L. Murrill, 767*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54649).

Japan: Sendai, *A. Yasuda, 76* (in Mo. Bot. Gard. Herb., 56315).

2. P. globifera Ellis & Everhart, Am. Nat. **1897**: 340. 1897; Sacc. Syll. Fung. **14**: 224. 1899.

Type: in N. Y. Bot. Gard. Herb. and a fragment in Burt Herb.

Fructifications broadly effused, separable when moistened, when dry horn-like, whitish to pale smoke-gray, the hymenium with somewhat convex granules, bristling with the crowded cystidia; in section 400–500 μ thick, not colored, with a layer about 200–300 μ thick towards the substratum composed wholly of densely interwoven, hyaline hyphae 3–5 μ in diameter, with the walls so gelatinously modified as to be very indistinct; no gloeocystidia; cystidia heavily and coarsely incrusted, 30–70 × 12–15 μ, very abundant both in the hymenium and im-

mersed throughout an outer zone up to 150 μ thick; basidiospores hyaline, even, 4–6 × 2–2½ μ.

Fructifications up to 10 cm. in diameter.

On bark of conifers. New York and Ontario, and in Montana, Idaho, British Columbia, Oregon, and New Mexico. August to October. Rare.

P. globifera is either known only from the type collection or else it is an extreme form of *P. gigantea*, for each of the more recent gatherings cited below has some character approaching *P. gigantea*. The distinctive features of the type of *P. globifera* are whiter color, much more numerous and larger cystidia which are also more coarsely incrusted, and a hymenial surface with some convex granules like those of *Grandinia granulosa*. The original description is erroneous in stating that the fructifications are closely adnate and that the spores are globose and 3 μ in diameter.

Specimens examined:

Ontario: Ottawa, McKay's Lake, *J. Macoun, 175*, type (in N. Y. Bot. Gard. Herb.) and a specimen from the type collection, comm. by J. Macoun; Harraby, *E. T. & S. A. Harper, 680;* St. Lawrence Valley, *J. Macoun, 85.*

New York: Mt. McIntyre, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55777).

Montana: Rockhill, *E. E. Hubert*, comm. by J. R. Weir, 11960 (in Mo. Bot. Gard. Herb., 63317).

Idaho: Coolin, *J. R. Weir, 11158M, 11491* (in Mo. Bot. Gard. Herb., 63254, 63279); Priest River, *J. R. Weir, 20.*

British Columbia: Kootenai Mts. near Salmo, *J. R. Weir, 517, 525* (in Mo. Bot. Gard. Herb., 5068, 19430).

Oregon: Portland, *C. J. Humphrey, 6126.*

New Mexico: Cloudcroft, *W. H. Long, 19524* (in Mo. Bot. Gard. Herb., 44765).

3. **P. arachnoidea** Burt, n. sp.

Type: in N. Y. Bot. Gard. Herb. and Burt Herb.

Fructifications effused, very thin, fragile, small pieces separable, white, becoming cartridge-buff in the herbarium, the hymenium continuous, not shining, fragile, loosely supported on an arachnoid subiculum, the margin delicately fibrillose or arach-

noid; in section 150–300 μ thick, not colored, 2-layered, with the layer next to the substratum composed of very loosely arranged, nodose-septate, hyaline hyphae 3–4 μ in diameter and with the hymenial layer about 50 μ thick, compact; no gloeocystidia; cystidia numerous, tapering, rough or granule-incrusted near the tips, 4–6 μ in diameter, protruding up to 40 μ beyond the basidia; spores hyaline, even, 3–4 × 2–2½ μ, copious.

Fructifications 1–4 cm. in diameter.

On bark of fallen limbs of *Populus* and *Alnus*. New Hampshire, New York, Alabama, and Oregon. October and November. Rare.

P. arachnoidea has the aspect of *Corticium arachnoideum* but is a *Peniophora*. The hyphae and their arrangement are like those of *P. cremea*. The microscopic characters are so similar to those of *Coniophora byssoidea* that the gatherings from northern localities may possibly be white forms of the latter which I have erroneously included under *P. arachnoidea*.

Specimens examined:

New Hampshire: Hanover, on *Populus*, *G. R. Lyman*, *27* (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 61589, and Burt Herb.).

New York: Ithaca, *G. F. Atkinson*, *2589*, formerly referred by me to *C. byssoidea;* Karner, on *Populus*, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 54376).

Alabama: Auburn, on *Alnus*, *F. S. Earle*, *97*, type, comm. by N. Y. Bot. Gard. Herb.; Montgomery County, *R. P. Burke*, *367* (in Mo. Bot. Gard. Herb., 57234).

British Columbia: Salmo, *J. R. Weir*, *472*, *480* (in Mo. Bot. Gard. Herb., 63357, 63387).

Oregon: White Pine, on hymenium of *Thelephora terrestris*, *J. R. Weir*, *620* (in Mo. Bot. Gard. Herb., 13999).

4. P. inconspicua (B. & C.) Massee, Linn. Soc. Bot. Jour. **25**: 149. *pl. 47, f. 14*. 1889; Sacc. Syll. Fung. **21**: 410. 1912.

Corticium inconspicuum Berkeley & Curtis, Linn. Soc. Bot. Jour. **10**: 336. 1868; Sacc. Syll. Fung. **6**: 615. 1888.

Type: in Kew Herb. and Curtis Herb.

Fructifications effused, thin, small, orbicular, gregarious, becoming confluent, membranaceous, small pieces separable, white

when fresh, becoming light buff in the herbarium, even, setulose with the cystidia, the margin composed of radiating hyphae; in section 250–300 μ thick, not colored, composed of densely interwoven, rather thick-walled and rigid, ascending hyphae 3–4 μ in diameter, not incrusted; no gloeocystidia; cystidia incrusted, fusoid, 50–60 × 12–15 μ, scattered in the surface of the hymenium; spores in a crushed preparation are hyaline, even, 4 × 3 μ, so few that they may not belong.

Fructifications about 2 mm. in diameter, becoming more or less confluent over areas up to 3 cm. long and 1 cm. wide.

On bark of dead frondose limbs. West Indies. December and March.

P. inconspicua has small clustered fructifications becoming confluent and very large cystidia scattered along the surface of the hymenium and none wholly immersed. In one portion of my sections the hyphae next to the substratum are slightly brownish and suggestive of those of a resupinate *Stereum* but I do not recall an effuso-reflexed *Stereum* of which *P. inconspicua* may be the resupinate fructification.

Specimens examined:

Cuba: Mountain of Rangel, *C. Wright*, Fungi Cubenses Wrightiani, 841, type (in Kew Herb., Curtis Herb., Mo. Bot. Gard. Herb., Burt Herb., and an unnumbered portion in N. Y. Bot. Gard. Herb.).

Porto Rico: Rio Piedras, *J. R. Johnston, 1664*, comm. by J. A. Stevenson (in Mo. Bot. Gard. Herb., 13223).

5. P. galochroa Bresadola, Hedwigia **35**: 200. 1896; Sacc. Syll. Fung. **14**: 224. 1899.

Type: a part in Burt Herb.

Broadly effused, membranaceous, small pieces separable, from white becoming pinkish buff, finally cracked and silky along the crevices, the margin somewhat fimbriate at first, soon similar; in section 250–400 μ thick, not colored, with hyphae rather stiff, thick-walled, 2–2½ μ in diameter, not incrusted, not nodose-septate, longitudinally arranged in a thin layer next to the substratum, densely interwoven in the broad middle region, the hymenial layer about 50 μ thick; no gloeocystidia; cystidia coarsely

incrusted, fusiform, 25–50 × 9–10 μ, barely protruding, usually immersed in all parts of the hymenial layer; spores published by Bresadola as 5½–6½ × 4–4½ μ but I find the type sterile.

Fructifications 3–6 cm. long, 1½–2½ cm. wide.

On bark of decaying branches and on wood. Brazil and West Indies. August to December. Rare.

In aspect *P. galochroa* is somewhat suggestive of *Corticium portentosum* but much thinner and very different in structure by the presence of cystidia which are confined to a hymenial layer not more than 50 μ thick in the specimens studied. The specimens from the West Indies, which I have referred to *P. galochroa*, have subglobose spores about 3 μ in diameter and are perhaps a distinct species if *P. galochroa* has as large spores as published by Bresadola, but I find the portion of the type communicated to me wholly sterile.

Specimens examined:

Brazil: Blumenau, *A. Möller*, type, from Bresadola.

Jamaica: Chester Vale, *W. A. & E. L. Murrill, 331, 751*, comm. by N. Y. Bot. Gard. Herb.

Porto Rico: Rio Piedras, *J. A. Stevenson, 2985* (in Mo. Bot. Gard. Herb., 7799).

6. P. odontioides Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, very thin, arachnoid-membranaceous, tender, small pieces separable when moistened, white, even, not shining, the margin thinning out, fibrillose; in section 50–130 μ thick, not colored, composed of thin-walled, loosely interwoven, suberect hyphae about 4–4½ μ in diameter, incrusted, becoming collapsed; no gloeocystidia; cystidia of *Odontia* type, transversely septate, cylindric-obtuse, 8 μ in diameter, protruding up to 45 μ, not incrusted or with a few incrusting granules; spores hyaline, even, 9–12 × 4–4½ μ, copious.

Fructifications in fragments which are 2–3 cm. long, 5–6 mm. wide.

On decaying frondose wood. Canada. July to September.

P. odontioides is distinguished among our thin, white species by having large, cross-septate cystidia such as are common in

many species of *Odontia* where they are clustered together in the granules, but in the present species such cystidia are distributed along an even hymenium devoid of granules.

Specimens examined:

Canada: *J. Macoun, 20;* St. Lawrence Valley, *J. Macoun, 14.*

Manitoba: 52° 15′ north latitude, Swan River, *G. R. Bisby, 1047,* type (in Mo. Bot. Gard. Herb., 59034).

7. P. exigua Burt, n. sp.

Type: in Mo. Bot. Gard. Herb. and N. Y. Bot. Gard. Herb.

Fructifications effused, small, circular, gregarious, thin, somewhat membranaceous, tender, small pieces separable when moistened, snow-white, even, contracting in drying and cracking into polygonal masses 1–2 mm. in diameter, with the white arachnoid subiculum visible on the sides of the fissures, the margin narrow, white, arachnoid; in section 150–180 μ thick, not colored, with some hyphae densely arranged parallel with the substratum and then ascending and loosely interwoven to the hymenial layer, about 3 μ in diameter, thin-walled, not nodose-septate, perhaps slightly incrusted in the hymenial layer; no gloeocystidia; cystidia incrusted, cylindric, 30–60 × 6–7 μ, confined to the hymenial layer and usually wholly immersed, a few protruding up to 12 μ beyond the basidia; spores hyaline, even, 4–5 × 2½ μ.

Fructifications 1–12 mm. in diameter—8 in an area 4 × 1 cm. and probably becoming confluent.

On bark of dead, fallen limbs, about 12 mm. in diameter, of a frondose species. Mexico. December.

P. exigua is distinguished among our species by its clustered, small, snow-white fructifications which crack into small polygonal masses.

Specimens examined:

Mexico: near Guernavaca, altitude 4500 m., *W. A. & E. L. Murrill, 377,* type, and *378* (in Mo. Bot. Gard. Herb., 54474, 54473, respectively).

8. P. laxa Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications broadly effused, thin, waxy-membranaceous, loosely attached to the substratum by a cottony subiculum, tender, small pieces separable, becoming pale ivory-yellow in the herbarium, even, not much cracked, the margin thinning out, fibrillose, with some mycelial strands; in section 200–300 μ thick, not colored, with the thin, compact hymenium supported by a very broad layer of loosely interwoven, thin-walled, granule-incrusted hyphae 1½–2 μ, rarely 3 μ, in diameter, with the hyphae more densely arranged in a middle zone of this layer; no gloeocystidia; cystidia not incrusted or with only a few incrusting granules, 4½–6 μ in diameter, protruding up to about 30–50 μ beyond the basidia, often capitate and 6–9 μ in diameter at the apex; basidia up to 6 μ in diameter, with 4 sterigmata; spores hyaline, even, spherical, 4½–6 μ in diameter, copious.

Fructifications 2–6 cm. long, 1–2½ cm. wide.

In woods on bark with the wood underneath wholly decayed. British Columbia. December.

P. laxa is probably white when growing and assumed the pale ivory-yellow tint in the herbarium; the aspect is like that of *P. arachnoidea* but with globose spores. *P. sphaerospora* of Europe has similar spores but much coarser, erect hyphae and different cystidia.

Specimens examined:

British Columbia: Sidney, *J. Macoun*, *8*, type (in Mo. Bot. Gard. Herb., 5767).

9. **P. humifaciens** Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, circular, thin, membranaceous, loosely attached by white rhizomorphic strands from the substratum, easily separable, white, becoming somewhat pale pinkish buff in the herbarium, the margin thinning out, floccose; in section 150 μ thick, not colored, with hyphae hyaline, up to 5 μ in diameter and coarsest next to the substratum, very loosely arranged, branching and becoming 3 μ in diameter towards the hymenial layer, nodose-septate, with few incrusting granules; no gloeocystidia, hymenial layer 30–40 μ thick, continuous; cystidia not incrusted, 3–3½ μ in diameter at base, protruding 25–40 μ,

tapering, attenuated to a long and very sharp point; basidia with 4 sterigmata; spores hyaline, even, subglobose, about 2½ × 2 μ, copious.

Fructifications 2–2½ cm. in diameter.

On very rotten coniferous log—perhaps *Thuja*. Washington. October. Rare.

P. humifaciens was so sparingly and loosely connected with the substratum by the white, mycelial strands that the impact of a hatchet against the log caused fructifications to fall away. *P. arachnoidea*, a related species, has quite different hyphae and cystidia and mode of attachment.

Specimens examined:

Washington: Chehalis, *C. J. Humphrey, 6266*, type.

10. P. candida (Pers.) Lyman, Boston Soc. Nat. Hist. Proc. **33**: 167. *pl. 20, f. 44–55, pl. 26, f. 138*. F. 1907.

Aegerita candida Persoon, Roemer Neues Mag. Bot. **1**: 120. 1794 (imperfect stage); Syn. Fung. 684. 1801; Fries, Syst. Myc. **3**: 220. 1829; Sacc. Syll. Fung. **4**: 661. 1886.—*Sclerotium Aegerita* Hoffmann, Fl. Germ. **2**: *pl. 9, f. 1*. 1795.—*Peniophora Aegerita* (Hoffm.) v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **116**: 814. 1907; **123**: 83. 1914; Sacc. Syll. Fung. **21**: 410. 1912; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 382. 1913; Rea, Brit. Basid. 687. 1922.—*Kneiffia farinosa* Bresadola, Ann. Myc. **1**: 105. 1903; Sacc. Syll. Fung. **17**: 178. 1905.

Illustrations: See Sacc. Syll. Fung. **19**: 25, for numerous figures of imperfect stage.

Fructifications effused, thin, adnate, very tender, at first farinose, then forming a continuous hymenium, white to pale cream-color, very minutely velvety under a lens, the margin thinning out, indeterminate, usually with clusters of the minute, globose, white, imperfect stage adjoining; in section 40–100 μ thick, not colored, with hyphae suberect, thin-walled, collapsing, of irregular outline, about 4 μ in diameter; no gloeocystidia; cystidia incrusted, scattered, starting from the substratum, 40–100 × 6–12 μ; spores hyaline, even, subglobose, 6–7 × 4½–6 μ.

Fructifications 2–4 cm. long, 1–2 cm. wide.

On decaying wood and fallen branches of *Alnus, Populus, Acer,*

Ulmus, etc., and on the ground. In Europe, and from Massachusetts to Missouri. October and November. Rare.

The association of the effused, white fructifications of *P. candida*, with the clustered, small, globose, white or cream-colored fructifications—about 5 or 6 to a mm.—of the imperfect stage, *Aegerita candida*, affords an easy means of recognizing *P. candida*.

Specimens examined:

Poland: *Eichler*, part of the type of *Kneiffia farinosa*, comm. by Bresadola.

France: Allier, *H. Bourdot, 19908.*

New Hampshire: Hanover, *G. R. Lyman.*

Massachusetts: Arlington, *A. P. D. Piguet*, comm. by W. G. Farlow, 33; Waverly, *G. R. Lyman*, two gatherings.

New York: Ithaca Flats, *G. F. Atkinson.*

Missouri: Creve Coeur, *E. A. Burt* (in Mo. Bot. Gard. Herb., 56059), and *F. P. McWhorter* (in Mo. Bot. Gard. Herb., 57309).

11. P. cana Burt, n. sp.

Type: in Mo. Bot. Gard. Herb. and N. Y. Bot. Gard. Herb.

Fructifications effused, closely adnate, very thin, hypochnoid, not forming an interwoven membrane, pilose under a lens, the margin pruinose, indeterminate; in section 10–30 μ thick, not colored, consisting of short, erect, simple or once- or twice-branched hyphae 3–3½ μ in diameter, not incrusted, not nodose-septate, and of large cystidia; no gloeocystidia; cystidia heavily incrusted, conical, 50–60 × 10–18 μ, protruding 30–45 μ, starting from the substratum, very numerous; spores hyaline, even, 3–3½ × 1½ μ as seen on basidia.

Fructifications fragmentary, with the fragments 1½–2 cm. long, 10–15 mm. wide.

On dark, brittle wood humus—probably of a frondose species. Florida. March.

P. cana is so thin and hoary that it is likely to be regarded as a Hyphomycete unless examined with the microscope. The large, conical, incrusted cystidia and small spores distinguish it from *P. albugo*.

Specimens examined:

Florida: Cutler Hummock, *W. A. Murrill, 82*, type, and *83*,

comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62102, 62103).

12. P. irregularis Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, very thin, adnate, flocculent, tender, white, interrupted, somewhat lacunose, not shining, the margin thinning out, with hyphae interwoven; in section 45–75 μ thick, not colored, composed of interwoven, hyaline, incrusted hyphae 2½ μ in diameter; no gloeocystidia; cystidia incrusted with coarse granules, 15–22 × 8–12 μ, barely protruding, confined to the hymenium; spores hyaline, even, 4½ × 2½ μ, borne 4 to a basidium.

Fructification 3½ cm. long and broken off at one end, 1 cm. wide.

On bark of a rotten frondose limb about 7 mm. in diameter. Cuba. December.

P. irregularis is a thin, white species of flocculent texture rather than waxy, with the dark substratum visible in small spaces not covered by the fructification.

Specimens examined:

Cuba: near Havana, *C. J. Humphrey, 2953*, type (in Mo. Bot. Gard. Herb., 9010).

13. P. albofarcta Burt, n. sp.

Type: in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., and Burt Herb.

Fructifications effused, adnate, dry, spongy-membranaceous, light buff to pinkish buff in the herbarium, minutely velutinous under a lens, even, but little cracked, the margin thinning out, minutely tomentose; in structure 200–350 μ thick, not colored, composed of a broad layer of loosely interwoven, rather rigid hyphae 3–3½ μ in diameter, not incrusted, not nodose-septate, and of a dense hymenial layer about 100 μ thick; no gloeocystidia; cystidia incrusted, slender-fusiform, 50–90 × 6–9 μ, protruding up to 30 μ, numerous in all parts of the hymenial layer; spores hyaline, even, spherical, 3–4 μ in diameter, only few found but seem to belong.

Fructifications in fragments 5 mm.–2 cm. long, 5–10 mm. wide.

On very rotten wood of stump of orange tree (*Citrus*). Louisiana. December.

The fructifications of *P. albofarcta* are scarcely distinguishable in color from the rotten wood upon which grown. The occurrence on *Citrus* wood, velvety hymenium, globose spores, and thick and loosely interwoven subiculum seem good, distinctive characters.

Specimens examined:

Louisiana: Point à la Hache, *A. B. Langlois, 894*, type (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 63729, and Burt Herb.).

14. P. longispora (Pat.) v. Höhnel, Ann. Myc. **3**: 325. 1905; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 392. 1913; Rea, Brit. Basid. 690. 1922.

Hypochnus longisporus Patouillard, Jour. de Bot. **1894**: 221. 1894; Sacc. Syll. Fung. **11**: 130. 1895.—*Kneiffia longispora* (Pat.) Bresadola, Ann. Myc. **1**: 105. 1903.

Fructifications widely effused, thin, pubescent, hypochnoid, not separable, white, becoming pale smoke-gray to pale olive-buff in the herbarium, the margin thinning out; in structure 30–120 μ thick, not colored, composed of suberect, loosely arranged, thin-walled, rough-walled, nodose-septate hyphae 2½–3 μ in diameter, and of cystidia; no gloeocystidia; cystidia acicular, rough-walled, 40–80 × 3–4 μ, protruding up to 60 μ; spores white in spore collection, even, 6–15 × 2½–3 μ.

Fructifications 3–10 cm. long, 1–5 cm. wide.

On bark and decaying wood of frondose species usually—especially *Populus*—rarely on conifers. In Europe and Africa and from Maine to Louisiana, Montana to Washington, and in the West Indies. July to March. Frequent.

P. longispora is well marked by its thin, white fructifications, hyphae, and needle-shaped cystidia rough or somewhat barbed with minute crystals, and the slender spores. There are few resupinate species which may be more confidently recognized.

Specimens examined:

Sweden: Lappland, *L. Romell, 316;* Stockholm, *L. Romell, 411.*
Poland: Russian Poland, *Eichler*, comm. by G. Bresadola.

Austria: Innsbruck, Tirol, *V. Litschauer.*
France: Allier, *H. Bourdot, 4073, 20807;* Aveyron, *A. Galzin, 11842, 17636,* comm. by H. Bourdot, 20861, 20862.
England: Doncaster, *E. M. Wakefield* (in Mo. Bot. Gard. Herb., 57118).
Maine: Kittery Point, *R. Thaxter & E. A. Burt.*
New York: East Berne, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 14859).
Florida: Royal Palm Hummock, *W. A. Murrill, 105,* comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62105).
Louisiana: Baton Rouge, *C. J. Humphrey, 2529* (in Mo. Bot. Gard. Herb., 20690); St. Martinville, *A. B. Langlois, br, dk.*
Montana: Columbia Falls, *C. J. Humphrey, 7239* (in Mo. Bot. Gard. Herb., 12526).
Idaho: Coolin, *J. R. Weir, 11255, 11541* (in Mo. Bot. Gard. Herb., 63259, 63296).
Washington: Olympia, *C. J. Humphrey, 6339.*
Cuba: *C. G. Lloyd, 436* (in Mo. Bot. Gard. Herb., 55169).
Jamaica: Blue Hole, *W. A. Murrill, 231,* comm. by N. Y. Bot. Gard. Herb.
Grenada: Grand Etang, *R. Thaxter,* comm. by *W. G. Farlow, 5.*

15. **P. asperipilata** Burt, n. sp.

Type: in Burt Herb. and U. S. Dept. Agr. Herb.

Fructifications effused, very thin, closely adnate, snow-white, velvety, the margin thinning out; in section 45–60 μ thick, not colored, composed of somewhat erect, loosely interwoven, thin-walled hyphae 3 μ in diameter, not incrusted, occasionally nodose-septate, which terminate in cystidia and clusters of basidia forming a hymenium barely continuous; no gloeocystidia; cystidia hair-like, slender, tapering to a sharp point, conspicuously denticulate or rough, 30–60 × 3–5 μ, protruding up to 50 μ beyond the basidia, very numerous; basidia 4-spored; spores hyaline, even, subglobose, 3½–4 μ in diameter.

Fructifications 1–2½ cm. in diameter in the fragmentary specimens known to me.

On rough bark of a frondose species. Louisiana and Texas. April and May. Rare.

P. asperipilata is a delicate, white, hypochnoid species covering very rough decaying bark. It is noteworthy by the abundant, needle-shaped, thin-walled cystidia with denticulate sides and by the globose spores.

Specimens examined:

Louisiana: St. Martinville, *A. B. Langlois, 44*, comm. by Lloyd Herb., 2395, and *1225*, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 44067).

Texas: Houston, *H. W. Ravenel, 265*, type (in U. S. Dept. Agr. Herb. and Burt Herb.).

16. P. albugo Burt, n. sp.

Type: in Burt Herb.

Fructifications longitudinally effused, filmy-pruinose, adnate, whitish, pale smoke-gray in the herbarium, even, the margin indeterminate, pruinose; in section 25–50 μ thick, not colored, with the basidia and cystidia starting directly from the substratum or with only very short, erect, intervening hyphae 2½–3 μ in diameter, thin-walled, collapsing; no gloeocystidia; cystidia not incrusted, 40–50 × 4½–6 μ, protruding up to 40 μ; spores white in spore collections, even, 5–8 × 3–4½ μ, borne 4 to a basidium.

Fructifications 5–8 cm. long, 1½–3 cm. wide.

Under side of decaying frondose wood. Louisiana. December and April.

P. albugo is a whitish, pruinose, filmy growth resembling in aspect the young sterile mycelia which are sent in for determination in nearly all extensive series of specimens, but in this instance Mr. Langlois took spore falls on glass from the specimens—a highly commendable method of saving time, which is wasted when sectional preparations are made of mere mycelia, and also of keeping rubbish from preservation in the herbarium. *P. albugo* is related to *P. detritica* of France but has less membranaceous fructifications and more elongated spores.

Specimens examined:

Louisiana: St. Martinville, *A. B. Langlois, ba*, type, and *dl.*

17. P. albula Atkinson & Burt, n. sp.

Type: in Burt Herb.

Fructifications long-effused, adnate, thin, tender, small pieces separable, white, becoming light buff when old and in the herbarium, somewhat granular, becoming cracked into polygonal masses 1–2 mm. in diameter, the margin thinning out; in section 70–200 μ thick, not colored, composed of suberect, thin-walled, branching hyphae about 3 μ in diameter, occasionally nodose-septate, not incrusted, sometimes slightly brownish near the substratum; no gloeocystidia; cystidia not incrusted, 3 μ in diameter, tapering towards the apex, protruding 10–20 μ, sometimes very few and inconspicuous; spores hyaline, even, 4–6 × 2½–3 μ.

Fructifications 2–20 cm. long, 1–2 cm. wide.

On bark of fallen decaying branches on the ground, of *Alnus*, *Acer*, *Tilia*, *Populus*, and other frondose species. Canada to Alabama and westward to Washington. July to February. Frequent.

P. albula belongs near *P. Sambuci* on account of its white color, somewhat granular hymenium, and minute cystidia which are not incrusted and sometimes so few and inconspicuous that they may possibly be overlooked, and the specimen referred to *Corticium*. *P. albula* differs from *P. Sambuci* in not having the hyphae incrusted in a subhymenial zone and in having them sometimes slightly brownish towards the substratum.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 409, under the name *Corticium calceum*.

Canada: *J. Macoun, 5*, type; Beechwood Cemetery, other locality not given, *J. Macoun, 58;* Ottawa, *J. Macoun, 9*.

Maine: Kittery Point, *R. Thaxter & E. A. Burt*.

New Hampshire: Chocorua, *W. G. Farlow, D* (in Mo. Bot. Gard. Herb., 56132).

Massachusetts: Sharon, *A. P. D. Piguet, 137*, comm. by Farlow Herb. (in Mo. Bot. Gard. Herb., 59628); Wayland, *A. B. Seymour, T 8* (in Mo. Bot. Gard. Herb., 19550).

New York: Albany, *H. D. House*, 3 gatherings (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 57447, 59683, 59686); Ithaca, several collections by *G. F. Atkinson, H. L. Jackson, C. O. Smith*, and *Van Hook*, comm. by G. F. Atkinson, 8028,

8069, 8072, 8235, 14392, 14393; Karner, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 54373); New York, Bronx Park, *L. M. Underwood* (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 61592, and Burt Herb.).

New Jersey: Newfield, *J. B. Ellis, J 87, D 81,* comm. by Farlow Herb. (in Mo. Bot. Gard. Herb., 8266, 14689, 7458), and in Ellis, N. Am. Fungi, 409.

Pennsylvania: Philadelphia, *A. S. Rhoads,* comm. by L. O. Overholts, 2679 (in Mo. Bot. Gard. Herb., 5919).

Maryland: Takoma Park, *C. L. Shear, 1271, 1272.*

District of Columbia: Chive Chose, *J. R. Weir, 372* (in Mo. Bot. Gard. Herb., 17649).

Virginia: Chain Bridge, *A. S. Rhoades,* comm. by L. O. Overholts, 3969 (in Mo. Bot. Gard. Herb., 54986).

Florida: *W. W. Calkins,* comm. by U. S. Dept. Agr. Herb.

Alabama: Montgomery, *R. P. Burke, 127, 157* (in Mo. Bot. Gard. Herb., 5499, 44964).

Iowa: Woodbine, *C. J. Humphrey & C. W. Edgerton,* comm. by C. J. Humphrey, 6511, 6546 (in Mo. Bot. Gard. Herb., 11063, 11276).

Washington: Bingen, *W. N. Suksdorf, 894, 900.*

18. P. Sambuci (Pers.) Burt, n. comb.

Corticium Sambuci Persoon, Roemer Neues Mag. Bot. **1:** 111. 1794; Fries, Epicr. 565. 1838; Hym. Eur. 660. 1874; Berkeley, Outlines Brit. Fung. 276. 1860; Massee, Linn. Soc. Bot. Jour. **27:** 137. 1890; Wakefield, Brit. Myc. Soc. Trans. **4:** 115. *pl. 3, f. 1, 2.* 1913; Rea, Brit. Basid. 677. 1922.—*Thelephora Sambuci* Persoon, Syn. Fung. 581. 1801; Myc. Eur. **1:** 152. 1822 (in subgenus *Corticium*).—*Hypochnus Sambuci* (Pers.) Sacc. Syll. Fung. **6:** 656. 1888.—*Thelephora sera* Persoon, Syn. Fung. 580. 1801; Myc. Eur. **1:** 151. 1822 (in subgenus *Corticium*).—*Corticium serum* (Pers.) Bresadola, I. R. Accad. Agiati Atti III. **3:** 112. 1897; Bourdot & Galzin, Soc. Myc. Fr. Bul. **27:** 246. 1911.

Fructifications effused, closely adnate, incrusting, not separable, snow-white or chalk-white, sometimes becoming pale cream-color in the herbarium, granular and pruinose, the margin thinning out; in section 100–250 μ thick, not colored, composed

of suberect, somewhat interwoven, thin-walled, incrusted hyphae 2½–3 μ thick, occasionally nodose-septate; no gloeocystidia; cystidia not incrusted, tapering towards the apex, 3 μ in diameter, protruding 10–30 μ beyond the basidia; spores hyaline, even, 4–5½ × 3–4 μ.

Fructifications 3–10 cm. long, 1–3 cm. wide, often surrounding small twigs.

On bark and wood of fallen *Sambucus* and other frondose species. In Europe and throughout North America. Throughout the year. Very common.

This species is very common, and has become so well known to mycologists early in their work, under its original name *Corticium Sambuci* that there has been a reluctance, which I feel also, to call it *Peniophora Sambuci*, which its structure really requires. Its cystidia have been termed sterile basidia and cystidioles, but they differ in no morphological respect from the cystidia of other species of *Peniophora*. The species occurs in especially fine condition on *Sambucus*, and it is well to use such specimens as standards for comparison.

Specimens examined:

Exsiccati: Bartholomew, Fungi Col., 3135, 4715; Brinkmann, Westfälische Pilze, 10; Cavara, Fungi Longobardiae, 63, 213; Cooke, Fungi Brit., 408; Ell. & Ev., Fungi Col., 607, under the name *Corticium scutellare;* Krieger, Fungi Sax., 523; Romell, Fungi Scand., 35; Roumeguere, Fungi Gallici, 2911; Westendorp, Herb. Crypt. Belge, 588.

Sweden: Stockholm, *L. Romell, 129, 200,* and in Romell, Fungi Scand., 35.

Germany: Saxony, *Krieger,* Fungi Sax., 523; Westphalia, in Brinkmann, Westfälische Pilze, 10.

Austria: Tirol, Innsbruck, *V. Litschauer.*

Italy: Rome, *G. Bresadola;* Brixia, *A. Marozzi,* and Papia, *F. Cavara,* in Cavara, Fungi Longobardiae, 63 and 213 respectively.

England: Forden, *E. Vize,* in Cooke, Fungi Brit., 408.

Belgium: Courtrai, in Westendorp, Herb. Crypt. Belge, 588.

France: *Fautrey,* comm. by Lloyd Herb., 4326, 4357; Bois de Vincennes, *N. Patouillard* (in N. Y. Bot. Gard. Herb., and

Mo. Bot. Gard. Herb., 55906); Rouen, in Roumeguere, Fungi Gallici, 2911.

Canada: *J. Macoun, 21, 26;* Lake Rosseau, *E. T. & S. A. Harper, 754;* Ottawa, *J. Macoun, 370.*

Maine: *F. L. Harvey* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55804).

New Hampshire: Chocorua, *W. G. Farlow, 2,* and *C3* (in Mo. Bot. Gard. Herb., 43893).

Vermont: Grand View Mountain, *E. A. Burt;* Middlebury, *E. A. Burt,* 4 gatherings; Weybridge, *E. A. Burt.*

Massachusetts: East Wareham, *C. L. Shear, 2903* (in Mo. Bot. Gard. Herb., 15448).

New York: Clarksville, *C. H. Peck,* comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 18281); Constableville, *C. H. Peck,* comm. by N. Y. State Mus. Herb., T4 (in Mo. Bot. Gard. Herb., 54571); Ithaca, *G. F. Atkinson, 942, 4567, 8047, 22960;* Lyndonville, *C. E. Fairman,* comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 57512); Marcellus, *L. M. Underwood, 62* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61595); New York, *W. A. Murrill* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61595).

New Jersey: Newfield, *J. B. Ellis,* in Ell. & Ev., Fungi Col., 607.

Pennsylvania: Trexlertown, *W. Herbst, 11.*

Louisiana: Baton Rouge, *Edgerton & Humphrey,* comm. by C. J. Humphrey, 5662; St. Martinville, *A. B. Langlois, dd, 37,* comm. by Lloyd Herb., 2384, and *1944,* comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 44065).

Michigan: Ann Arbor, *C. H. Kauffman* (in Mo. Bot. Gard. Herb., 5584); Gogebic County, *E. A. Bessey, 372* (in Mo. Bot. Gard. Herb., 56636).

Missouri: Creve Coeur, *L. O. Overholts* (in Mo. Bot. Gard. Herb., 63704); St. Louis, *E. A. Burt* (in Mo. Bot. Gard. Herb., 63466, 58335).

Kansas: Stockton, *E. Bartholomew, 5815, 8206* (in Mo. Bot. Gard. Herb., 16709, 62175), and in Bartholomew, Fungi Col., 4715; Rooks County, *E. Bartholomew, 2045* (in Mo. Bot. Gard. Herb., 4827).

Washington: Bainbridge Island, *E. Bartholomew,* in Bartholo-

mew, Fungi Col., 3135; Olympia, *C. J. Humphrey, 6311;* Sedro-Woolley, *C. J. Humphrey, 7464.*

California: Claremont, *I. M. Johnston,* comm. by L. O. Overholts, 3645 (in Mo. Bot. Gard. Herb., 54699); Santa Catalina Island, *L. W. Nuttall, 522b* (in Mo. Bot. Gard. Herb., 57622).

Mexico: Guernavaca, *W. A. & E. L. Murrill, 391,* comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54548); Orizaba, *W. A. & E. L. Murrill, 756,* comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54644).

19. P. Thujae Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, thin, closely adnate, white, sometimes becoming cartridge-buff in the herbarium, the margin thinning out; in section 40–150 μ thick, not colored, with the hyphae loosely arranged, suberect, interwoven, 2–3 μ in diameter, nodose-septate, thin-walled, becoming incrusted in a subhymenial zone; no gloeocystidia; cystidia hair-like, not incrusted, 3 μ in diameter at the base, tapering upward and sometimes somewhat capitate at apex, protruding 20–30 μ beyond the basidia; spores white in a spore collection, 4–5 × 3 μ.

Fructifications 2–6 cm. long, 1–2 cm. wide, on trunks of *Thuja,* more rarely on *Juniperus* and *Pinus Strobus.* Canada to Massachusetts, and westward to Missouri. July to October. Occasional.

P. Thujae may be recognized by its thin, white fructifications on white cedar, with microscopic structure as stated. It differs from *Peniophora Sambuci* in having thinner fructifications, not becoming granular and pruinose, cystidia numerous, and in occurrence on a coniferous substratum.

Specimens examined:

Canada: *J. Macoun 62;* St. Lawrence Valley, *J. Macoun, 68, 80;* Ottawa, *J. Macoun* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55813), and *45,* and *J. M. Macoun* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 56078); Quebec, Hull, *J. Macoun, 173.*

Vermont: Middlebury, *E. A. Burt,* 3 gatherings, one of which is the type.

Massachusetts: Magnolia, *W. G. Farlow, f;* Newton, *W. G. Farlow.*
New York: Ithaca, *G. F. Atkinson, 14416;* North River, *C. H. Peck,* comm. by N. Y. State Mus. Herb., T5 (in Mo. Bot. Gard. Herb., 54569).
Missouri: St. Louis, *E. A. Burt.*

20. P. montana Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, thin, adnate, tender, whitish to ivory-yellow, widely cracked in drying and showing the loose subiculum on the sides of the crevices, the margin thinning out, somewhat floccose; in section 200–225 μ thick, not colored, composed of loosely interwoven, thin-walled, hyaline hyphae 4–5 μ in diameter, not incrusted, not nodose-septate, of irregular outline; no gloeocystidia; cystidia hair-like, not incrusted, conical, tapering to a sharp apex, 6–9 μ in diameter at the base, protruding up to 40 μ; spores hyaline, even, cylindric, slightly curved, 12–14 × 4–5 μ.

Fragmentary fructification 4 cm. long, 1 cm. wide.

On badly decayed coniferous wood at an altitude of 10,000 ft. Colorado. July. Rare.

P. montana is noteworthy by having spores as large as those of *P. mutata,* but the fructifications are thinner and more tender than those of *P. mutata* and occur on coniferous wood and have no gloeocystidia.

Specimens examined:
Colorado: Ouray, *C. L. Shear, 1188,* type.

21. P. terricola Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, thin, closely adnate, somewhat membranaceous, white, not waxy, the margin indeterminate, thinning out; in section 100–200 μ thick, not colored, composed of suberect, branching hyphae 3–6 μ in diameter, incrusted, densely interwoven and with more or less sand intermixed; no gloeocystidia; cystidia not incrusted, cylindric, 4–6 μ in diameter, protruding 20–50 μ beyond the basidia; spores hyaline, even, 4–6 × 3–4 μ.

Fructifications received in fragments but probably about 1–3 cm. in diameter.

On ground in mixed woods. New York and Louisiana. April and June.

The fructifications of *P. terricola* contain so much of the sand from the earth substratum that it is difficult to secure sections or to distinguish the fructification proper from its vegetative mycelium. The occurrence in small white patches on the ground, and the characters of spores and cystidia may enable recognition of this species which is probably common.

Specimens examined:

New York: Ithaca, *G. F. Atkinson, 22658, 22659*, type.
Louisiana: St. Martinville, *A. B. Langlois, bq.*

22. P. magnahypha Burt, n. sp.

Type: in Mo. Bot. Gard. Herb. and Farlow Herb.

Fructifications interruptedly effused, thin, adnate, between pale drab-gray and pale vinaceous-fawn, contracting in drying into small, more or less completely separated masses, not waxy, the margin thinning out; in section 150–180 μ thick, not colored, composed of erect hyphae 9–10 μ in diameter which start from the substratum at points 30–100 μ apart, branch repeatedly into branches of smaller diameter, are sparingly granule-incrusted, and terminate in large clusters of basidia and one or a few cystidia forming a hymenium; no gloeocystidia; cystidia not incrusted, septate, 9 μ in diameter, protruding up to 60 μ beyond the basidia; basidia with 4 sterigmata; spores hyaline, even, 9–10 × 6 μ.

Fructifications up to 4 cm. long, 2 cm. wide.

On decaying wood of a frondose species. Florida. Autumn.

While preliminary inspection of *P. magnahypha* with a lens does not promise more than any one of the great number of little-differentiated, perplexing, whitish resupinate species difficult to identify yet doing an important work in splitting up complex organic compounds, nevertheless its structural characters are unique. The combination of coarse, scattered, trunk-like, erect hyphae with the main trunk hypha or some of its principal branches protruding through and beyond the flat-topped cluster

of basidia as a transversely septate cystidium should lead to the ready recognition of this species when sectional preparations are studied.

Specimens examined:

Florida: Cocoanut Grove, *R. Thaxter, 57*, type (in Mo. Bot. Gard. Herb., 43947).

23. P. exilis Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications longitudinally effused, very thin, closely adnate, pale olive-buff, even, somewhat velutinous, the margin thinning out, indeterminate; in section 30–60 μ thick, not colored, composed of erect, bushy-branched hyphae 3 μ in diameter, ascending from the substratum, soon terminating in basidia and cystidia, not nodose-septate, with very little, if any, incrustation; no gloeocystidia; cystidia hair-like, irregular, flexuous, 30 × 4½–5 μ, protruding up to 20 μ, few and scattered; basidia simple, with 4 short sterigmata; spores hyaline, even, 4½–5 × 2½–3 μ.

Fructifications 1–6 cm. long, about 1 cm. wide.

On bark of decaying branches of frondose species in moist virgin forest. Mexico. January.

The fructifications of *P. exilis* occur as a thin, downy, gray coating on very rotten branches 1–2 cm. in diameter. The pale olive-buff color should be helpful in separating this species from the great number more white in color.

Specimens examined:

Mexico: Guernavaca, *W. A. & E. L. Murrill, 385*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54467); Orizaba, *W. A. & E. L. Murrill, 757*, type, and *780*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54619, 54620).

24. P. livida Fries in herb. under *Corticium*, n. sp.

Peniophora serialis in part of v. Höhnel & Litschauer, Bourdot & Galzin, and Rea.—Not *Corticium seriale* Fries of Fries Herb.—Not *Xerocarpus Cacao* Karsten, Hedwigia **29**: 271. 1890.

Type: in Herb. Fries, determined by E. Fries as *Corticium lividum*.

Fructifications longitudinally effused, closely adnate, waxy-soft, variable in color, pale olive-gray and pale olive-buff to fawn-color in the herbarium, glabrous, even, not cracked usually, rarely with a few fissures from contraction in drying, the margin thinning out; in section 75–500 μ thick, not colored, composed of densely interwoven, rather erect hyphae about 3 μ in diameter, indistinct, with the wall gelatinously modified; no gloeocystidia; cystidia not incrusted, tapering to a sharp apex, 3½–6 μ in diameter, protruding up to 40 μ beyond the basidia; spores hyaline, even, 4–5 × 1½–2 μ.

Fructifications 3–12 cm. long, 1–3 cm. wide.

Generally on old, decaying, coniferous wood, rarely on frondose wood. Europe, Louisiana, and British Columbia. Throughout the year.

P. livida may be best recognized by its close resemblance in aspect to even specimens of common *Corticium lividum* Pers., from which the presence of cystidia separate it. *P. livida* is one of the 3 species which European mycologists, following Bresadola, have been inclined to regard as sufficiently meeting the original description of *Corticium seriale* that one could ignore the fact that the species concerned do not agree in structure with one another, nor with any of the specimens in Kew Herbarium or Fries Herbarium, determined by Elias Fries as *Corticium seriale*. With regard to the appliability of the original description of *Corticium seriale*, it emphasizes rimose and testaceous fructifications which are not characters of *P. livida*. It might solve the problem of *Corticium seriale* Fr. to search in Sweden for a true *Corticium* which is testaceous and rimose and could be compared with the specimen in Kew Herbarium determined by Fries —something more like *Corticium Cacao* Karst, which has the hymenium somewhat deteriorated in my specimen so that I cannot be quite positive as to its genus from this specimen alone but seems to me to be a true *Corticium*.

Specimens examined:

Sweden: *E. Fries*, type, the thinner and paler of the specimens in Herb. E. Fries, determined by E. Fries as *Corticium lividum; L. Romell, 108, 109;* Femsjö, *L. Romell, 410;* Stockholm, *L. Romell, 198, 326, 345, 362.*

Austria: Tirol, Innsbruck, V. Litschauer, 3 specimens under the name *P. serialis*.

Louisiana: Bogalusa, *C. J. Humphrey, 5547*.

British Columbia: Revelstoke, *C. W. Dodge, 1639* (in Mo. Bot. Gard. Herb., 58784); Sidney, *J. Macoun, 9* (in Mo. Bot. Gard. Herb., 5768); Victoria, *J. Macoun, 541* (in Mo. Bot. Gard. Herb., 63728).

25. P. phyllophila Massee, Linn. Soc. Bot. Jour. **25**: 150. 1889; Sacc. Syll. Fung. **9**: 238. 1891; Rea, Brit. Basid., 697. 1922.

Asterostromella epiphylla v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **116**: 773. *text f. 3.* 1907.

Type: type distribution in Ravenel, Fungi Am., 457, under the name *Corticium epiphyllum*.

Fructification broadly effused, thin, closely adnate, not at all separable, whitish, becoming olive-buff in the herbarium, the margin thinning out; in section 40–80 μ thick, not colored, composed of suberect, interwoven, branching, thin-walled hyphae 2 μ in diameter, not incrusted, not nodose-septate, bearing clusters of basidia and branching paraphyses; also present occasional, tapering cystidia not incrusted, 30–45 × 4–10 μ, usually immersed, occasionally protruding up to 32 μ beyond the basidia; paraphyses colorless, branching at the hymenial surface into an antler-shaped form with very slender prongs; spores published by v. Höhn. & Lits. as 10–22 × 1½–3 μ.

Fructifications up to 5 cm. in diameter.

On fallen frondose leaves in South Carolina and on fallen decaying frondose limbs in Florida and Central America.

P. phyllophila is apparently a tropical species occurring more frequently on epidermis of small fallen twigs and ranging northward to South Carolina. I have studied specimens of the type distribution in the copies of Ravenel, Fungi Americana, of Farlow Herbarium, Missouri Botanical Garden Herbarium, United States Department of Agriculture Herbarium, and Burt Herbarium, and find these specimens to be the same in structure and all showing the distinctive antler-shaped paraphyses emphasized by v. Höhnel & Litschauer, and also tapering, non-

incrusted cystidia which are presumably what Massee really saw. I see no reason for displacing the specific name given by Massee for the later combination proposed by v. Höhnel & Litschauer. The basidia are so young that I found none bearing sterigmata nor spores and only twice slender spores 12–15 × 3 μ.

Specimens examined:

Exsiccati: Ravenel, Fungi Am., 457, type distribution, under the name *Corticium epiphyllum.*

South Carolina: Aiken, *H. W. Ravenel,* in Ravenel, Fungi Am., 457.

Florida: *W. W. Calkins.*

Central America: Panama Chagres, *F. L. Stevens, 1300* (in Mo. Bot. Gard. Herb., 63521).

26. P. piliseta Burt, n. sp.

Type: in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., and Burt Herb.

Fructifications longitudinally effused, thin, somewhat membranaceous, tender, small pieces separable when moistened, whitish cream-color in the herbarium, not cracked, not shining, the margin thinning out, with the hyphae interwoven; in section 100–120 μ thick, not colored, composed of ordinary, interwoven, thin-walled hyphae about 3 μ in diameter, not incrusted nor nodose-septate, and of a system of hyaline tissue about 1 μ in diameter, not taking stain, branching like the coarser tissue of *Corticium investiens* and with its delicate antler-shaped branches barely visible in the hymenial surface; no gloeocystidia; cystidia not incrusted, cylindric, obtuse, 4½–6 μ in diameter, protruding 30–45 μ, confined to the surface of the hymenium; spores hyaline, even, cylindric, biguttulate, 9–11 × 4–4½ μ, copious.

Fructification 7½ cm. long, broken off at one end, 10–15 mm. wide.

On a very rotten, small, frondose limb about 1 cm. in diameter. Porto Rico. June.

P. piliseta is noteworthy by having in addition to an ordinary hyphal system in its fructification an additional system, intermixed with the first, of delicate, branching organs not taking

stain, such as is more distinctly visible, because coarser, in *P. phyllophila*, *Hypochnus pallescens*, *Corticium investiens* and *Grandinia granulosa*, and whose peripheral branches are more or less visible in the surface of the hymenium as antler-shaped paraphyses. *P. mexicana* has coarser hyphae and more hypochnoid surface.

Specimens examined:

Porto Rico: Martin Piña, Rio Piedras, *J. R. Johnston, 971 a*, type (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 63243, and Burt Herb.).

27. P. mexicana Burt, n. sp.

Type: in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb.

Fructifications longitudinally effused, adnate, dry, hypochnoid, thin, cream color in the herbarium, even, velutinous under a lens, not cracked, the margin thinning out; in section 140 μ thick, not colored, composed of even-walled, rather rigid, loosely arranged, branching hyphae 5–7 μ in diameter, not incrusted, not nodose-septate, which ascend obliquely from the substratum and bear a dense hymenium containing numerous cystidia and branching, filiform paraphyses (or perhaps conidiophores); no gloeocystidia; cystidia minutely incrusted or rough, tapering, 60–100 × 5–9 μ, protruding 40–60 μ; spores (perhaps conidia) hyaline, even, 6–7½ × 4–5 μ, copious.

Fructifications 4 cm. long and broken off at both ends, 6 mm. wide.

In depressed places on very rotten frondose wood. Mexico. January.

The dry, cream color or buff fructifications of hypochnoid texture, very coarse hyphae, large cystidia, and branching paraphyses or conidiophores in the surface of the hymenium are characters which should make this species recognizable, although my inability to demonstrate basidia convinces me that the type is in a conidial stage somewhat comparable with that of *Corticium roseum*.

Specimens examined:

Mexico: Orizaba, Nuevo, altitude 3600 m., *W. A. & E. L. Murrill, 773*, type (in Mo. Bot. Gard. Herb., 54633).

28. P. ludoviciana Burt, n. sp.

Type: in Burt Herb., and Farlow Herb. probably.

Fructifications effused, adnate, very thin, buff-yellow, darkening to cinnamon-buff in the herbarium, hymenium subvelutinous, not waxy, not cracking, the margin thinning out, paler; in section 40–75 μ thick, not colored, composed of suberect, branching, granule-incrusted, hyaline hyphae 3–4 μ in diameter; no gloeocystidia; cystidia hyaline, not incrusted, protruding 18–25 μ beyond the basidia; spores hyaline, even, 4–5 × 2½–3½ μ, somewhat flattened on one side.

Fructifications 1–2½ cm. long, ½–1½ cm. broad, becoming confluent.

On rotting decorticated wood of frondose species. Louisiana and Michigan. August and April. Rare.

P. ludoviciana closely resembles in aspect *P. flammea* and, like the latter, is not separable from the substratum and gives no noteworthy color changes when the sections are treated with potassium hydrate solution. Prolonged search has failed to find any immersed cystidia. *P. sulphurina* has larger, cracked fructifications with shining hymenium and yellow subiculum.

Specimens examined:

Louisiana: St. Martinville, *A. B. Langlois, 1919*, type, comm. by W. G. Farlow.

Michigan: Vermilion, *A. H. W. Povah, 369* (in Mo. Bot. Gard. Herb., 13921).

29. P. fusca Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, very thin, drying ecru-drab to drab, velvety, even, the margin not determinate, thinning out; in structure 35–45 μ thick, not colored, composed of loosely arranged, suberect, hyaline hyphae more or less incrusted, 3½–4 μ in diameter under the incrustation, not nodose-septate; no gloeocystidia nor conducting organs; cystidia hair-like, not incrusted, 7–12 μ in diameter at the base, protruding 40–125 μ beyond the basidia; basidia with 4 sterigmata; spores copious, hyaline, even, 6–7 × 3½ μ.

Fructifications 2–6 cm. long, 1–2 cm. wide, becoming larger by confluence.

On very rotten, decorticated and probably frondose wood. Alabama. June to October. Only 2 gatherings known.

P. fusca is a thin species of mucedinous aspect, like *P. longispora* but well characterized by its drab color, large cystidia, and moderately large spores. *P. cinerea* is sometimes of the same color but is less mould-like when viewed with a lens and with quite different structure and microscopic characters.

Specimens examined:

Alabama: Montgomery County, *R. P. Burke, 508*, type, and *836* (in Mo. Bot. Gard. Herb., 57301 and 63125 respectively).

30. P. gilvidula Bresadola, Mycologia **17**: 70. 1925.

Type: in Weir Herb.

Fructifications broadly effused, closely adnate, waxy, pinkish buff in the herbarium, here and there somewhat cracked, pruinose, the margin thinning out; in section 150–250 μ thick, not colored, 2-layered, the layer next the substratum 75–150 μ thick, composed of densely arranged hyphae about 4–5 μ in diameter, not incrusted, which are longitudinally interwoven in the type, hymenial layer 75–100 μ thick, composed of densely arranged, erect, coarse tissue; no gloeocystidia; cystidia not incrusted, 6–8 μ in diameter, protruding 30–60 μ beyond the basidia, not numerous, confined to the hymenium; basidia with 4 sterigmata; spores white in the mass, even, 5–6 × 2½–3½ μ, copious.

Fructifications 8–15 cm. long, 3–5 cm. wide.

On wood of log of *Pinus ponderosa*. Montana. September.

P. gilvidula has no especially distinctive character. The occurrence on *Pinus ponderosa* wood, buff color, thick hymenial layer, coarse hyphae, and small spores constitute the group of distinguishing characters. I have included under *P. gilvidula* a specimen from the same place which has the layer next to the substratum composed of erect hyphae.

Specimens examined:

Montana: Evaro, *J. R. Weir, 23305*, type (in Weir Herb.) and *426* (in Mo. Bot. Gard. Herb.).

31. P. zonata Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications widely effused, closely adnate, thick, layered or zonate within, avellaneous, pruinose, contracting in drying and cracking into more or less connected masses about 1 mm. in diameter, the margin thinning out; in section 700 μ thick, probably stratose but perhaps with merely a hymenium of several (4 in the type) layers or zones, not colored, composed of densely arranged hyphae about 2½–3 μ in diameter, with somewhat gelatinously modified and indistinct, not sharply defined as tramal, and hymenial layers; no gloeocystidia; cystidia not incrusted, 3 μ in diameter at the base, tapering to a sharp apex, protruding up to 30 μ, very numerous in the surface of the hymenium; spores hyaline, even, curved, 4½ × 2½ μ, copious.

Portion of fructification 7 cm. long, 4 cm. wide, broken off at one end and on sides.

On decayed coniferous wood. Oregon. March.

The cystidia are so small and so very numerous in the hymenial surface and the season when collected—March—so early in the year that it is possible that this species is a stratose *Corticium* just starting a new outer stratum on its fructification, but I do not recognize it as a *Corticium* at present known to me. No matter what the genus may prove to be, the thick, somewhat liver-colored fructifications of layered or stratose structure, and notably cracked, should always make this species easy to recognize.

Specimens examined:

Oregon: Corvallis, *S. M. Zeller, 2252*, type (in Mo. Bot. Gard. Herb., 63030).

32. P. laminata Burt, n. sp.

Type: in Burt. Herb.

Fructifications broadly effused, thin, adnate, not separable, cream-buff to warm buff, pubescent, somewhat tubercular, at length cracking into small masses 2–3 to a mm., the margin thinning out, fibrillose; in section 75–140 μ, rarely 200 μ, thick, not colored, becoming stratose, 1–6 strata, each composed of a supporting layer of loosely arranged, erect, hyaline hyphae 3–3½ μ in diameter, thin-walled, collapsing, not incrusted, and of a compact hymenial layer; no gloeocystidia; cystidia not incrusted,

hair-like, cylindric, obtuse, 3–3½ μ in diameter, protruding up to 30 μ beyond the basidia; basidia 4-spored; spores hyaline, even, 4½ × 3–3½ μ, copious.

Fructifications 2–8 cm. in diameter.

On bark and wood of fallen decaying trunk of *Pinus Strobus*. Vermont. December. Rare.

P. laminata is so suggestive in color and general aspect of the very common *Corticium investiens* that it is possible *P. laminata* has been passed by as a thin, young specimen of *C. investiens*, but the structure of these two species is quite different. The color of *P. laminata* does not fade in the herbarium; my gathering of nearly thirty years ago still has the color originally noted.

Specimens examined:

Vermont: Middlebury, *E. A. Burt*, type.

33. **P. guttulifera** (Karst.) Sacc. Syll. Fung. **9**: 240. 1891; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 400. 1913.

Gloeocystidium guttuliferum Karsten, Finska Vet. Soc. Bidrag Natur och Folk **48**: 430. 1889.

Type: a portion in Burt Herb.

Fructifications broadly effused, closely adnate, thin, becoming light buff to pinkish buff and chamois-colored in the herbarium, more or less studded with minute, hard, globular masses of resinous color which are visible under a lens but dissolve and disappear in aqueous mounts, the margin indeterminate, thinning out; in section 50–160 μ thick, not colored, with the hyphae erect, branching, 3–5 μ in diameter, not incrusted; no gloeocystidia; cystidia heavily incrusted, often obtuse, 40–90 × 10–15 μ, protruding up to 60 μ; spores white in a spore collection, even, depressed on one side, 7–10 × 3–4½ μ.

Fructifications 2–5 cm. long, 1–2½ cm. wide.

On decaying wood of *Populus*, *Betula*, *Acer*, and undetermined frondose species. In Europe, and from Canada to Louisiana and westward to Oregon. May to January. Rare.

The type specimen of *P. guttulifera* differs from *P. pubera* in having no gloeocystidia whatever and in bearing on its surface minute, globular, shining masses of such aspect as occur on tips of the granules in *Odontia sudans*. Such masses are also borne

on specimens from France communicated by Bourdot, and they are stated to be borne on the cystidia—this in addition to the usual incrustation of these cystidia. Since the resinous-colored masses disappear in the liquids to which they are subjected in sectioning and making aqueous preparations for microscopic study, I am inclined to regard the presence of these masses as perhaps due to weather conditions prevalent when the specimens bearing them were collected—a helpful, confirmatory specific feature when present, but not a necessary morphological character of *P. guttulifera*. Hence I have included under *P. guttulifera*, specimens which have spores 7–10 × 3–4½ μ, lack gloeocystidia, and have the aspect of *P. pubera*.

Specimens examined:

Finland: Mustiala, *P. A. Karsten*, type of *Gloeocystidium guttuliferum*, under the label *Gloeocystis guttulifera*.
Sweden: Femsjö, *E. A. Burt;* Göteberg, *L. Romell, 295*.
France: Allier, St. Priest, *H. Bourdot, 6656, 8458*.
Canada: Ottawa, *J. Macoun, 130 a*.
Maine: Kittery Point, *R. Thaxter & E. A. Burt*, 2 gatherings.
New Hampshire: Shelburne, *W. G. Farlow, 3*.
Vermont: Middlebury, *E. A. Burt*.
New Jersey: Newfield, *J. B. Ellis* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61398).
Alabama: Montgomery County, *R. P. Burke, 212, 478* (in Mo. Bot. Gard. Herb., 57083, 57295).
Louisiana: *A. B. Langlois, 256*, comm. by U. S. Dept. Agr. Herb.
Ohio: Lancaster, *W. A. Kellerman, 168*, comm. by U. S. Dept. Agr. Herb.
British Columbia: Agassiz, *J. Macoun, 129*.
Oregon: Corvallis, *W. A. Murrill, 940*, comm. by N. Y. Bot. Gard. Herb., 55715.

34. P. flavido-alba Cooke, Grevillea **8**: 21. *pl. 125, f. 14*. 1879; Sacc. Syll. Fung. **6**: 644. 1888; Massee, Linn. Soc. Bot. Jour. **25**: 151. 1889.

Type: in Kew Herb.

Fructifications broadly effused, thin, closely adnate, cracking in drying, becoming cartridge-buff to pinkish buff in the her-

barium, setulose with the large cystidia, the margin indeterminate, thinning out; in section 75–250 μ thick, not colored, composed of densely interwoven, hyaline hyphae about 3 μ in diameter, not incrusted, and of very numerous large cystidia, many of which are often tilted in all directions; no gloeocystidia; cystidia heavily incrusted, cylindric-fusiform to conical, sharp-pointed, 60–120 × 12–18 μ, numerous in all regions to the substratum, protruding up to 50 μ beyond the basidia; spores hyaline, even, white in a spore collection, 4½–6 × 2½–3½ μ.

Fructifications 5–15 cm. or more long, 2–5 cm. wide.

On bark of decaying limbs of *Carya*, *Liquidambar*, *Myrica*, *Quercus*, *Salix*, *Vitis*, and other frondose species. South Carolina to Louisiana, West Virginia and Ohio to Arkansas, and in the West Indies. July to April. Common.

P. flavido-alba resembles in aspect *P. pubera* with which it was confused by v. Höhnel & Litschauer in their study of specimens distributed by Ravenel and by Ellis in their exsiccati, but differs sharply from *P. pubera* in absence of gloeocystidia and in having smaller spores. Its spores are smaller than those of *P. guttulifera;* it lacks layered structure, and the cystidia are much larger than in either *P. Ravenelii* or *P. Roumeguerii*. There may be observed in sectional preparations a curious tilting of many cystidia, some towards the right and some towards the left while most are erect and the tilting is at varying angles, being occasionally quite parallel with the substratum. Such tilting is unique among the species of *Peniophora* known to me and is best shown by the immersed cystidia in sections from the thicker fructifications. The type specimen in Kew Herbarium is on the same substratum, *Myrica*, as the specimens distributed in Ravenel, Fungi Am., 226, and impressed me as probably being from the same gathering.

Specimens examined:

Exsiccati: Bartholomew, Fungi Col., 4741; Ellis, N. Am. Fungi, 1209; Ell. & Ev., N. Am. Fungi, 3412; Ravenel, Fungi Am., 226.

South Carolina: *P. H. Rolfs, 1622, 1625.*

Georgia: Atlanta, *E. Bartholomew, 5677, 5689* (in Mo. Bot. Gard. Herb., 44253); Darien, *H. W. Ravenel, 2529*, type (in

Kew Herb.) and specimens in Ravenel, Fungi Am., 226, and Ellis, N. Am. Fungi, 1209.

Florida: *W. W. Calkins*, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 44634), and *628*, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 44641, 44254); New Smyrna, *C. G. Lloyd, 2128;* Tallahassee, *E. Bartholomew, 5722* (in Mo. Bot. Gard. Herb., 44256).

Alabama: Auburn, *F. S. Earle & C. F. Baker, 2217* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61344); Montgomery County, *R. P. Burke, 68, 147, 164, 169, 237, 444, 463, 465, 475, 667* (in Mo. Bot. Gard. Herb., 18395, 7552, 44963, 44959, 57105, 57271, 57284, 57286, 57293, 63089).

Louisiana: Abita Springs, *A. B. Langlois, 2684;* Baton Rouge, *Edgerton & Humphrey*, comm. by C. J. Humphrey, 5665; New Orleans, *E. Bartholomew*, in Bartholomew, Fungi Col., 4741, and *5765* (in Mo. Bot. Gard. Herb., 44265); *A. B. Langlois, 460* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61476); St. Martinville, *A. B. Langlois, 2680*, comm. by Lloyd Herb., 3529, and *1954, 2679, aq. bt, cm*, and *cn*.

West Virginia: Ellis Coll., 48 (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61395).

Ohio: Cincinnati, *C. G. Lloyd, 4515, 4526, 4806*.

Kentucky: Crittenden, *C. G. Lloyd, 3115;* Mammoth Cave, *C. G. Lloyd, 1602*, and in Ell. & Ev., N. Am. Fungi, 3412.

Arkansas: Bigflat, *W. H. Long, 19894* (in Mo. Bot. Gard. Herb., 6387).

Cuba: San Antonio de los Baños, Havana Province, *Earle & Murrill, 88*, comm. by N. Y. Bot. Gard. Herb.; Pinar del Rio Province, *Earle & Murrill, 241*, comm. by N. Y. Bot. Gard. Herb.; Santiago de las Vegas, *H. Hasselbring* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61468).

Porto Rico: Rio Piedras, *J. A. Stevenson, 3366, 5582, 6068* (in Mo. Bot. Gard. Herb., 7574, 6944, 54685).

Jamaica: Hall's Delight, *F. S. Earle, 134*, comm. by N. Y. Bot. Gard. Herb.

35. P. vernicosa Ellis & Everhart in herb., n. sp.

Type: in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., and Burt Herb.

Fructifications long and broadly effused, very thin, closely adnate, pinkish buff in the herbarium, even, somewhat puberulent and setulose under a lens, not cracked, the margin thinning out, indeterminate; in section 30–45 μ thick, not colored, composed of densely interwoven, hyaline hyphae about 3 μ in diameter, indistinct; no gloeocystidia; cystidia incrusted, fusiform, 40–50 × 10–15 μ, protruding up to 50 μ beyond the basidia; spores hyaline, even, 4–5 × 3–3½ μ.

Fructifications 10–12 cm. long, 2–3 cm. wide.

On dead pieces of *Celtis*. Florida and Louisiana. August and March.

The 3 gatherings under the name *P. vernicosa* in Ellis Collection of New York Botanical Garden and duplicates of these communicated to me directly by Langlois seem to be thin forms of 3 species, 2 of which are well known. The type of *P. vernicosa* shows the location of the fructification by the pinkish buff color of the area covered, somewhat varnish-like effect produced, and cystidia visible under a lens. There is the bare possibility that *P. vernicosa* may be demonstrated to be the very early stage of *P. flavido-alba* but my knowledge of the latter does not at present warrant such a conclusion.

Specimens examined:

Florida: Cutler Hammock, *W. A. Murrill, 86*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62082).

Louisiana: St. Martinville, *A. B. Langlois, 1965*, type (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 63726, and Burt Herb.).

36. **P. texana** Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications long and broadly effused, adnate, thin, even, not shining, drying between cream-buff and pinkish buff and cracking transversely, the margin indeterminate, thinning out; in section about 100 μ thick, not colored, with the hyphae indistinct, interwoven, 3–3½ μ in diameter, not incrusted; cystidia incrusted, conical, often tilted, not colored, 45–55 × 10–12 μ, protruding beyond the basidia up to 45 μ; no gloeocystidia nor conducting organs; spores copious, hyaline, even, 4½–6 × 3–4½ μ.

Fructifications up to 25 cm. long, 5 cm. broad.

On bark of *Juniperus sabinoides*. Texas. October. Only the type collection known.

Although occurring on bark of *Juniperus*, *P. texana* is not at all related to *P. laevigata* and seems rather to belong in the group of species of which *P. flavido-alba* is best known. The occurrence on *Juniperus*, the large expanse of the fructifications, and large cystidia and spores should afford recognition of *P. texana*.

Specimens examined:

Texas: Austin, *W. H. Long, 21070*, type (in Mo. Bot. Gard. Herb., 55134).

37. P. flammea Burt, n. sp.

Type: in Burt Herb. and N. Y. Bot. Gard. Herb.

Fructifications effused, adnate, very thin, olive-ocher to deep chrome, fading to clay color in the herbarium, hymenium often with some granules, the margin thinning out, paler; in section 50–90 μ thick, not colored and with no color changes by potassium hydrate solution, with hyphae 3 μ in diameter, interwoven next to the substratum but suberect, branching and granule-incrusted towards the hymenium; no gloeocystidia; wholly immersed cystidia incrusted, 15–60 × 5–10 μ, few and scattered; hair-like cystidia not incrusted, 3–5 μ in diameter at base, protruding 20–30 μ beyond the basidia, are scattered in the surface of the hymenium; spores hyaline, even, 3½–5 × 1½–2½ μ.

Fructifications 1–10 cm. long, 5 mm.–2½ cm. broad.

On rotting wood and bark of frondose species and on under side of rotting leaves of *Sabal*. Florida, Alabama, Texas, Cuba, and Bermuda. March to June. Probably rare.

P. flammea has the intense yellow color of *Corticium chrysocreas* and *Odontia Wrightii* but, unlike these species, its sections do not become vinaceous and then bleach when treated with potassium hydrate solution and the structural details of the sections are quite different also. *Peniophora sulphurina* is yellow and has small spores, but the fructification of *P. flammea* is as closely adnate to, and inseparable from, the substratum as that of *P. cinerea*.

Specimens examined:

Florida: Tarpon Springs, *W. A. Murrill, 216*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62121).
Alabama: Montgomery, *R. P. Burke, 3, 158* (in Mo. Bot. Gard. Herb., 17431, 44962).
Texas: Austin, *W. H. Long, 524*.
Cuba: *C. G. Lloyd, 421* (in Mo. Bot. Gard. Herb., 55172); El Yunque Mt., Baracoa, *L. M. Underwood & F. S. Earle, 1215*, type, comm. by N. Y. Bot. Gard. Herb.
Bermuda: Paget Swamp, *H. H. Whetzel, Abe* (in Mo. Bot. Gard. Herb., 58905).

38. P. isabellina Burt, n. sp.

Type: in Burt Herb.

Fructifications longitudinally effused, very thin, closely adnate, not at all separable, between light pinkish cinnamon and avellaneous, not shining, becoming somewhat minutely cracked, the margin thinning out; in section 50–75 μ thick, not colored, composed of innumerable cystidia and densely arranged hyphae 2½–3 μ in diameter, indistinct; no gloeocystidia; cystidia incrusted, 30 × 6 μ, protruding up to 12 μ, fusoid, usually starting from the substratum; spores 6 × 3 μ present but so few found that they may not belong.

Fructification 8 cm. long and broken off at both ends, 1 cm. broad.

On dead canes of blackberry (*Rubus*), and perhaps on other frondose wood. Virginia and Alabama. June to September.

P. isabellina is as closely adnate as *P. cinerea* and *P. versicolor*, from both of which it differs in not being colored in section. The occurrence of the type on blackberry stems may be helpful in recognizing this species, but several other species also occur on blackberry stems. The specimen from Alabama, referred to *P. isabellina*, is probably specifically distinct.

Specimens examined:

Virginia: Woodstock, *C. L. Shear, 1191*, type.
Alabama: Montgomery County, *R. P. Burke, 62* (in Mo. Bot. Gard. Herb., 18207).

39. P. coccineo-fulva (Schw.) Burt, n. comb.

Phlebia coccineo-fulva Schweinitz, Am. Phil. Soc. Trans. N. S.

4: 165. 1832; Sacc. Syll. Fung. **11**: 112. 1895.—*Corticium rhodellum* Peck, N. Y. State Mus. Rept. **42**: 122. 1889.—*Peniophora rhodella* (Peck) Sacc. Syll. Fung. **9**: 239. 1891.—*Peniophora Karstenii* Massee, Linn. Soc. Bot. Jour. **25**: 153. 1889.—*Corticium calotrichum* Karsten, Rev. Myc. **10**: 73. 1888; Soc. pro Fauna et Fl. Fenn. Meddel. **16**: 21. 1888; Icones Hym. Fenn. **3**: 7. *pl. 4, f. 71.* 1891; Sacc. Syll. Fung. **6**: 617. 1888; **9**: 232. 1891.—*Peniophora rhodochroa* Bresadola, Mycologia **17**: 70. 1925.—*Peniophora leprosa* Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 394. 1913.

Type: in Schweinitz Herb. and Farlow Herb.

Fructifications effused, adnate, becoming russet to Natal brown in the herbarium, sometimes cracked, the margin paler; in section typically vinaceous russet but sometimes not colored, 150–400 μ thick, 2-layered, the layer next to substratum 100–300 μ thick, composed of loosely interwoven, thin-walled hyphae 4–8 μ in diameter, with many rough-walled or incrusted, the hymenial layer very dense, typically colored, bearing the cystidia; cystidia hyaline or slightly colored, incrusted, 40–80 × 10–14 μ, protruding up to 50 μ; spores hyaline, even, 4–5 × 2–2½ μ.

Fructifications 4–10 cm. long, 2 cm. broad.

On rotting wood and bark of *Juglans*, *Quercus*, and other frondose species, rarely on conifers. Canada to Alabama and westward to British Columbia and California, and in Mexico; occurs in Europe also. July to December. Frequent.

P. coccineo-fulva has been confused with *P. velutina*, from which it differs when best developed, in more intense color, the vinaceous subhymenial layer often showing this color on edges of cracks in the fructification, and in the incrusted hyphae. Paler specimens which are not otherwise distinguishable from *P. velutina* I have now referred to *P. coccineo-fulva* when they have the large, incrusted hyphae of the latter, for the European concept of *P. velutina*, as shown by specimens under this name in Kew Herbarium and communicated to me by Bourdot, Bresadola, Romell, and Litschauer, has the hyphae not incrusted, with the exception of additional specimens from Bresadola and Romell which they distinguished as different from *P. velutina* by labelling as "*Peni-*

ophora velutina Fr. f. *pallidior*," and which I cite below as *P. coccineo-fulva*. These European specimens have exactly the same structure as the authentic specimen of *Corticium calotrichum* sent to me by Karsten, who noted the large rough hyphae in the description in Icones Hym. Fenn. **3**: 7, but the hyphae are really granule-incrusted.

Specimens examined:

Exsiccati: Ell. & Ev., N. Am. Fungi, 2019, under the name *Peniophora velutina;* Ell. & Ev., Fungi Col., 707, under the name *Peniophora velutina;* Rabenhorst, Fungi Eur., 3231, under the name *Corticium alneum*, the type distribution of *Peniophora Karstenii*.

Finland: Mustiala, *P. A. Karsten*, authentic specimen of *Corticium calotrichum*, and in Rabenhorst, Fungi Eur., 3231.

Sweden: Femsjö, *L. Romell, 421;* on *Fagus*, Hangnen, Femsjö, *E. A. Burt.*

Germany: *Brinkmann*, comm. by Bresadola as *Peniophora velutina* Fr. f. *pallidior*.

France: Aveyron, *A. Galzin, 26563*, comm. by H. Bourdot, 32878, authentic specimen of *Peniophora leprosa*.

Canada: Hull, Quebec, *J. Macoun, 197;* Lambeth, Ontario, *J. Dearness, D 172b* (in Mo. Bot. Gard. Herb., 5482); Granton, *J. Dearness, 966* (in Mo. Bot. Gard. Herb., 22582); Ottawa, *J. Macoun 197, 291*, and *J. M. Macoun, 230* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55756, 55920, 56081 respectively).

New Brunswick: Campobello, *W. G. Farlow, 2* (in part).

Maine: Boarstone Mountain, Piscataquis County, *W. A. Murrill, 2404* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61354).

New Hampshire: Chocorua, *W. G. Farlow, 43* (in Mo. Bot. Gard. Herb., 43972); North Conway, *A. S. Rhoads, 10* (in Burt Herb., and Mo. Bot. Gard. Herb., 56979).

Vermont: Middlebury, *E. A. Burt*, 2 gatherings.

New York: Albany, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 59703); Alcove, *C. L. Shear, 1309;* Floodwood, *C. H. Peck* (in N. Y. State Mus. Herb., Burt Herb., and Mo. Bot. Gard. Herb., 55986); Hudson Falls,

S. H. Burnham, 36 (in Mo. Bot. Gard. Herb., 54457); Ithaca Flats, *G. F. Atkinson, 3090;* Karner, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 54368); Lyndonville, *C. E. Fairman,* type of *Corticium rhodellum* (in N. Y. State Mus. Herb.); Westport, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55968).

New Jersey: Belleplain, *C. L. Shear, 1242;* Newfield, *J. B. Ellis,* in Ell. & Ev., N. Am. Fungi, 2019, and Fungi Col., 707, and (in Burt Herb., N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 57337, 63455).

Maryland: Takoma Park, *C. L. Shear, 1335.*

Pennsylvania: Nazareth, *Schweinitz,* type of *Phlebia coccineo-fulva* (in Herb. Schweinitz and Farlow Herb.).

Alabama: Auburn, comm. by Alabama Biological Survey; Montgomery, *R. P. Burke, 72, 188, 635* (in Mo. Bot. Gard. Herb., 17582, 57068, 63072).

Ohio: Cincinnati, *C. G. Lloyd, 2808.*

Michigan: Ann Arbor, *C. H. Kauffman, 35* (in Mo. Bot. Gard. Herb., 20025); New Richmond, *C. H. Kauffman, 26* (in Mo. Bot. Gard. Herb., 16386); Vermilion, *A. H. W. Povah, 5* (in Mo. Bot. Gard. Herb., 9225).

Wisconsin: Lake Geneva, *E. T. & S. A. Harper, 834, 961;* Madison, *C. J. Humphrey & M. C. Jensen, 631* (in Mo. Bot. Gard. Herb., 10275).

Colorado: Pike's Peak, *G. G. Hedgcock,* comm. by C. J. Humphrey, 2554 (in Mo. Bot. Gard. Herb., 9782).

Idaho: Priest River, *J. R. Weir, 131* (in Mo. Bot. Gard. Herb., 15762), and *16809,* type of *Peniophora rhodochroa* (in Weir Herb. and Mo. Bot. Gard. Herb., 63690).

British Columbia: Kootenai Mts. near Salmo, *J. R. Weir, 535* (in Mo. Bot. Gard. Herb., 21995).

California: Big Wash Cañon, Santa Catalina Island, *L. W. Nuttall, 889,* comm. by Field Mus. Nat. Hist. Herb. (in Mo. Bot. Gard. Herb., 57650).

Arizona: Coronado Nat. Forest, *G. G. Hedgcock,* comm. by C. J. Humphrey, 2547 (in Mo. Bot. Gard. Herb., 9906).

Mexico: Jalapa, *W. A. & E. L. Murrill, 144,* comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 6962).

40. P. laevis (Fr.) Burt in R. Fries, R. Sci. Soc. Gothoburgens Actis IV. **3**: [36]. 1900; in Peck, N. Y. State Mus. Bul. **54**: 954. 1902; v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **115**: 1550. 1906; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 398. 1913; Rea, Brit. Basid. 692. 1922.

Thelephora laevis Fries, Elenchus Fung. **1**: 206. 1828. Not *T. laevis* Persoon.—*Corticium laeve* Fries, Epicr. 560. 1838; Hym. Eur. 649. 1874.—*Kneiffia laevis* (Fries) Bresadola, Ann. Myc. **1**: 99. 1903.

Type: authentic specimen in Kew Herb.

Fructifications effused, membranaceous, adnate, separable from the substratum when moistened, drying light pinkish cinnamon to buff-pink and ochraceous buff, the margin radiately fibrillose; in section not colored, 300–400 μ thick, with the hyphae 3–4½ μ in diameter, not colored, granule-incrusted, densely crowded together and running parallel with the substratum and then ascending obliquely into the hymenium; cystidia incrusted or not incrusted, 40–60 × 4½–9 μ, protruding up to 30 μ, confined to the hymenial layer; spores white in a spore collection, even, 4½–6 × 2½–3 μ.

Fructifications 2–10 cm. long, 2–4 cm. broad.

On bark of frondose species. Europe, New Brunswick to Texas and westward to Washington and Oregon, in Cuba and in Island of Guam and in Japan. July to October. Not common.

Peniophora laevis is one of the species which Karsten understood as *Corticium radiosum* and sent under this name to Fries, as shown by the specimens in Herb. Fries determined by Karsten, and preserved by Fries without comment. Bresadola collected the species occasionally and communicated to me duplicates under the herbarium name *Peniophora albo-gilvida*. The above specimens agree in aspect with the authentic specimen of *Corticium laeve* from Fries in Kew Herb. and also agree with it in the details of microscopic structure including incrusted hyphae, smaller than those of *Peniophora coccineo-fulva* and more compactly and more longitudinally arranged than those of *P. sanguinea*. *P. affinis* does not have its hyphae at all incrusted.

Specimens examined:

Sweden: authentic specimen (in Kew Herb.); on *Betula, L. Romell, 122;* Gottenburg, *L. Romell, 120;* Stockholm, *L. Romell, 358.*

Finland: *P. Karsten, 32* (in Fries Herb., under the name *Corticium radiosum*); Mustiala, *P. Karsten,* under the name *C. radiosum,* comm. by Bresadola, and also on *Alnus* under the name *Peniophora velutina.*

Russian Poland: *Eichler, 107,* comm. by Bresadola.

France: Allier, St. Priest, *H. Bourdot, 8981,* under the name *P. Eichleriana.*

Italy: Trient, Alps Mts., *Bresadola,* two specimens.

New Brunswick: Campobello, *W. G. Farlow, 2.*

New Hampshire: Chocorua, *W. G. Farlow, 12* (in Burt Herb.) and *C 35, C 38, 40* (in Mo. Bot. Gard. Herb., 43963, 43967, 43971).

Vermont: Middlebury, *E. A. Burt,* three gatherings.

Massachusetts: Magnolia, *W. G. Farlow;* Williamstown, *W. G. Farlow, 9.*

New York: East Galway, *E. A. Burt;* East Schaghticoke, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55758); East Schodack, *C. H. Peck, 12;* Hague, *C. H. Peck, 2;* Ithaca, *G. F. Atkinson, 4598;* North Greenbush, *H. D. House, 14.234* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 44733); Snyder, *C. H. Peck, 16.*

New Jersey: Newfield, *J. B. Ellis, 2020,* comm. by W. G. Farlow, 22 (in Mo. Bot. Gard. Herb., 7943).

Virginia: Crabbottom, *W. A. Murrill, 169, 259* (in N. Y. Bot. Gard. Herb., 61557, 61568).

Alabama: Montgomery County, *R. P. Burke, 129, 213, 813* (in Mo. Bot. Gard. Herb., 11034, 57085, 63115).

Texas: Gonzales, *C. L. Shear, 1231.*

Kentucky: Crittenden, *C. G. Lloyd, 10113* (in Mo. Bot. Gard. Herb., 58689).

Ohio?: locality not stated, *C. G. Lloyd, 4195.*

Michigan: New Richmond, *C. H. Kauffman, 47* (in Mo. Bot. Gard. Herb., 3259).

Wisconsin: Blue Mounds, *E. T. & S. A. Harper, 943;* Lake Geneva, *E. T. & S. A. Harper, 836;* Palmyra, *A. O. Stucki, 53.*

Missouri: Perryville, *R. A. Studhalter & L. O. Overholts, 2706* (in Mo. Bot. Gard. Herb., 44290).
Nebraska: Lincoln, *C. L. Shear, 540.*
Idaho: Priest River, *J. R. Weir, 608* (in Mo. Bot. Gard. Herb., 63196).
British Columbia: Sidney, *J. Macoun, 10* (in Mo. Bot. Gard. Herb., 5728).
Washington: Bingen, *W. N. Suksdorf, 764;* Arlington, *C. J. Humphrey, 7610.*
Oregon: Eugene, *C. J. Humphrey, 6061;* Tidewater, *S. M. Zeller, 1985* (in Mo. Bot. Gard. Herb., 58762).
Cuba: Ceballos, *C. J. Humphrey, 2805.*
Island of Guam: *Edwards,* comm. by J. R. Weir, 10765 (in Mo. Bot. Gard. Herb., 56238).
Japan: Mt. Mikuma, Prov. Awaji, *A. Yasuda, 62* (in Mo. Bot. Gard. Herb., 56138).

41. P. subiculosa Burt, n. sp.

Type: in Mo. Bot. Gard. Herb. and N. Y. Bot. Gard. Herb.

Fructifications effused, somewhat membranaceous, tender, small pieces separable when moist, with the hymenium drying cartridge-buff, pulverulent, here and there cracked and showing the whitish subiculum which is pale chamois-colored next to the substratum and connected with chamois-colored marginal mycelial strands or cords; in section 400–500 μ thick, not distinctly colored, with the hyphae loosely interwoven, hyaline, 4 μ in diameter, not nodose-septate, granule-incrusted in all regions with large crystalline granules; cystidia heavily incrusted, 20–60 × 9 μ, protruding up to 15 μ, confined to the hymenium; spores hyaline, even, 3–3½ × 2½ μ, borne 4 to a basidium.

Fructifications 2–3 cm. long, 1 cm. broad.

On humus of frondose wood. Mexico. December. Only one collection known.

P. subiculosa is related to *P. Burtii* but differs from it in having larger and incrusted cystidia and all hyphae heavily incrusted.

Specimens examined:

Mexico: Guernavaca, *W. A. & E. L. Murrill, 396,* type (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 54550).

42. P. septocystidia Burt, n. sp.

Type: in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., and Burt Herb.

Fructifications effused, the small patches becoming more or less confluent, membranaceous, separable, between warm buff and cinnamon-buff in the herbarium, somewhat tubercular through conforming to the irregularities of the substratum, the margin byssoid, with some mycelial strands; in section 250–400 μ thick, not colored, 2-layered, the layer next to the substratum much the thicker, composed of very loosely interwoven, incrusted hyphae 4–5 μ in diameter under the incrustation, not nodose-septate, the hymenial layer dense, 35–45 μ thick; no gloeocystidia; cystidia incrusted with a few, large, somewhat colored granules, transversely septate, 5 μ in diameter under the incrustation, protruding 30–35 μ, scattered along surface of hymenium; spores hyaline, even, cylindric, curved, 5–7 × 2½–3 μ.

Fructifications 5 mm.–2½ cm. in diameter after confluence.

On decaying bark and humus. West Indies. January.

P. septocystidia is somewhat related to *P. sanguinea*, *P. Burtii*, and *P. subiculosa*, but is of different color, with very coarse hyphae and noteworthy cystidia.

Specimens examined:

Jamaica: Troy and Tyre, Cockpit Country, *W. A. Murrill & W. Harris, 860*, type (in Burt Herb., N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61490).

43. P. canadensis Burt, n. sp.

Type: in Burt Herb.

Fructification effused, adnate, dry, hypochnoid, small pieces separable when moistened, cream-color in the herbarium, even, tomentose under a lens, not shining, the margin thinning out, of finely interwoven hyphae; in section 300–350 μ thick, not colored, stratose, each of the two strata composed of loosely arranged, erect, branching, nodose-septate, somewhat incrusted hyphae 4–6 μ in diameter, which are slightly colored near the substratum and hyaline elsewhere, and of a more compact hymenial layer containing cystidia; no gloeocystidia; cystidia incrusted, cylin-

dric, 50–90 × 6–9 μ, protruding up to 45 μ, very numerous in the hymenium; basidiospores hyaline, even, 7–8 × 4–5 μ, copious, four to a basidium; other spherical spores 3½–4 μ in diameter are present in addition to immersed basidiospores in the buried hymenium.

Fructification 2½ cm. long, 2 cm. wide, broken off at both ends.

On wood of coniferous log and bark of *Fraxinus*. Canada and New York. September and October.

The type of *P. canadensis* somewhat resembles *P. pubera* in aspect but has texture more suggestive of *Coniophora byssoidea*. Such aspect, together with the coarse hyphae, large spores, and numerous large cystidia should fix the species. Unfortunately, the type consists of but a single piece of the dimensions stated, which was present in a packet of *Corticium bombycinum*. The New York gathering consists of a group of very small fructifications only one stratum thick.

Specimens examined:

Canada: locality not given, *J. Macoun, 60* (in part), type.

New York: Ithaca, *G. F. Atkinson*, Cornell Univ. Herb., 8282.

44. P. cremea Bresadola, Fungi Trid. **2:** 63. *pl. 173, f. 2.* 1898; Sacc. Syll. Fung. **16:** 195. 1902; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28:** 396. 1913; Wakefield, Brit. Myc. Soc. Trans. **5:** 131. 1914; Rea, Brit. Basid. 691. 1922.

Kneiffia cremea Bresadola, Ann. Myc. **1:** 100. 1903.—An *Corticium Eichlerianum* Bresadola, Ann. Myc. **1:** 95. 1903?

Type: in Bresadola Herb. probably; authentic specimens in Burt Herb.

Fructifications broadly effused, membranaceous, separable, white or cream-color to ochraceous buff and darkening somewhat in the herbarium, sometimes cracking when dry and showing the white subiculum, the margin white and cobwebby; in section 100–300 μ, rarely 500 μ, thick, not colored, composed of a broad layer next to the substratum of thick-walled, hyaline, erect hyphae 4½–6 μ in diameter, branching at a wide angle, sometimes dichotomously, more or less granule-incrusted towards the hymenial layer; hymenial layer dense, bearing protruding cystidia even-walled or incrusted about the apex and containing also immersed,

incrusted cystidia when thickened; protruding cystidia cylindric or tapering towards the apex, 5–10 μ in diameter at the base, protruding up to 60 μ beyond the basidia; immersed cystidia 40–60 × 9–10 μ; no gloeocystidia; spores white in a spore collection, even, 5–8 × 2½–3½ μ.

Fructifications 4–15 cm. long, 2–4 cm. wide.

On bark-covered and decorticated branches of frondose species on the ground. In Europe, Canada to Louisiana, and westward to the Pacific States and in Japan and in Natal, Africa. May to January. Infrequent but widely distributed.

P. cremea is readily recognizable among the species of the northern United States and Canada by its thick, white or creamy fructifications which have small spores, lack gloeocystidia, and are 2-layered with the thick under layer composed of coarse, loosely arranged, erect hyphae branching at an angle of towards 60° and often dichotomously. These hyphae and their arrangement are distinctive. *P. mutata* has the same aspect and color but differs by much longer spores and the presence of gloeocystidia. *P. velutina* has its hyphae ascending obliquely to the hymenial layer.

Specimens examined:

Sweden: *L. Romell, 196;* Femsjö, *L. Romell, 218.*

Germany: Westphalia, Lengerich, *Brinkmann, 341,* determined and communicated by Bresadola.

Russian Poland: *Eichler,* determined and communicated by Bresadola.

Austria: Tirol, Gries, *V. Litschauer;* Innsbruck, *V. Litschauer;* Stiermark, *V. Litschauer.*

France: Aveyron, *M. Galzin, 13292,* comm. by H. Bourdot, 20856.

England: Doncaster, *E. M. Wakefield* (in Mo. Bot. Gard. Herb., 57126).

Canada: *J. Macoun, 24.*

New Hampshire: Chocorua, *E. A. Burt.*

Vermont: Bristol, *E. A. Burt,* two gatherings; Middlebury, *E. A. Burt,* two gatherings.

Massachusetts: Magnolia, *W. G. Farlow, a;* Sharon, *A. P. D. Piguet,* comm. by W. G. Farlow.

New York: East Galway, *E. A. Burt,* three gatherings; Bergen

Swamp, Genesee County, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 57473).

New Jersey: Newfield, *J. B. Ellis, 68* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 63425).

District of Columbia: *W. A. Murrill, 1496* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 63453, 63465).

Alabama: Montgomery County, *R. P. Burke, 800* (in Mo. Bot. Gard. Herb., 63108).

Louisiana: St. Martinville, *A. B. Langlois, k, 1386, 1963, 2631* (in Burt Herb., N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 63456, 63503).

Michigan: Gogebic County, *E. A. Bessey, 321* (in Mo. Bot. Gard. Herb., 56543).

Montana: Rexford, *E. E. Hubert*, comm. by J. R. Weir (in Weir Herb., and Mo. Bot. Gard. Herb., 63246).

Idaho: Coolin, *J. R. Weir, 11499, 11575* (in Mo. Bot. Gard. Herb., 63261, 63303), and an unnumbered specimen (in Weir Herb., and Mo. Bot. Gard. Herb., 63247); Priest River, *J. R. Weir, 609* (in Mo. Bot. Gard. Herb., 63197).

Manitoba: Swan River, *G. R. Bisby, 1049* (in Mo. Bot. Gard. Herb., 59036); Winnipeg, *G. R. Bisby, 1117* (in Mo. Bot. Gard. Herb., 59040).

British Columbia: Sidney, *J. Macoun, 23, 28, 73, 82, 104, 834* (in Mo. Bot. Gard. Herb., 5757, 55335, 5758, 5759, 55337, 55334).

Washington: Bingen, *W. N. Suksdorf, 867;* Chehalis, *C. J. Humphrey, 6260;* Everson, *C. J. Humphrey, 7453;* Kalama, *C. J. Humphrey, 6205.*

Oregon: Corvallis, *S. M. Zeller, 1867* (in Mo. Bot. Gard. Herb., 56871); Eugene, *C. J. Humphrey, 6088.*

California: Palo Alto, *W. A. Murrill, 1173*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55706); Santa Catalina Island, Grand Canyon, *L. W. Nuttall, 1060*, comm. by Field Mus. Herb. (in Mo. Bot. Gard. Herb., 58883).

Japan: Sendai, *A. Yasuda, 46* (in Mo. Bot. Gard. Herb., 56160); Mt. Mikuma, Prov. Awaji, *A. Yasuda, 53* (in Mo. Bot. Gard. Herb., 56161).

Africa: Natal, Durban, *P. A. van der Bijl, 612* (in Mo. Bot. Gard. Herb., 59377).

45. P. velutina (DC) Cooke, Grevillea **8**: 21. *pl. 125, f. 15.* 1879; Sacc. Syll. Fung. **6**: 644. 1888; Massee, Linn. Soc. Bot. Jour. **25**: 152. 1889; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 398. 1913; Rea, Brit. Basid. 692. 1922.

Thelephora velutina De Candolle, Fl. Fr. **6**: 33. 1815; Fries, Elenchus Fung. **1**: 203. 1828.—*Corticium velutinum* (DC) Fries, Epicr. 561. 1838; Hym. Eur. 650. 1874.—*Kneiffia velutina* (DC) Bresadola, Ann. Myc. **1**: 100. 1903.

Fructifications broadly effused, membranaceous, separable, becoming vinaceous buff to fawn color in the herbarium, minutely velvety, the margin whitish, often extended in branching mycelial strands; in section not colored, 250–500 μ thick, composed of loosely interwoven hyphae up to 5–8 μ in diameter, not incrusted, only very rarely nodose-septate; cystidia incrusted, 40–100 × 8–15 μ, wholly immersed in the hymenial tissue or protruding up to 50 μ; spores white in spore falls, even, 4½–5½ × 2½–3 μ.

Fructifications 3–20 cm. long, 2–15 cm. broad.

On decaying limbs and logs of such frondose species as *Fagus, Quercus, Castanea, Populus*, etc., more rarely on coniferous wood. Throughout Canada and the United States and in Europe. May to December. Frequent.

P. velutina may be recognized by its large and rather thick fructifications of pinkish or vinaceous color when dry, separable from the substratum when moistened, by frequent presence of marginal mycelial strands, and by the coarse, non-incrusted hyphae—often up to 8 μ in diameter—present in sectional preparations near the substratum.

Specimens examined:

Sweden: *L. Romell, 121, 133;* Stockholm, *L. Romell, 137.*

Poland: *Eichler*, from Bresadola.

Austria: Tirol, *V. Litschauer.*

France: Cormatin, *F. Guillemin, 10*, in part; St. Priest, Allier, *H. Bourdot, 20859.*

Canada: *J. Macoun, 231*, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 14763); Ontario, Casselman, *J. Macoun, 366.*

New Hampshire: Chocorua, *W. G. Farlow, 71* (in Mo. Bot. Gard. Herb., 43973).

Vermont: Ripton, *E. A. Burt.*

Massachusetts: *R. J. Blair*, comm. by L. O. Overholts, 3812 b (in Mo. Bot. Gard. Herb., 54994).

New York: Alcove, *C. L. Shear, 1198;* East Galway, *E. A. Burt,* two gatherings: Floodwood, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55967), *E. A. Burt*; Karner, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 54393).

New Jersey: Alpine, *P. Wilson, 29* (in Mo. Bot. Gard. Herb., 54748).

Pennsylvania: State College, *L. O. Overholts, 3326* (in Mo. Bot. Gard. Herb., 9533).

Alabama: Montgomery County, *R. P. Burke, 419* (in Mo. Bot. Gard. Herb., 57259).

Tennessee: Elkmont, *C. H. Kauffman, 73* (in Mo. Bot. Gard. Herb., 54330).

Michigan: New Richmond, *C. H. Kauffman, 54* (in Mo. Bot. Gard. Herb., 11996); Seney, *C. J. Humphrey, 1596* (in Mo. Bot. Gard. Herb., 17541).

Wisconsin: Madison, *C. J. Humphrey, 2156* (in Mo. Bot. Gard. Herb., 6729).

Illinois: Anna, *C. J. Humphrey, 2044* (in Mo. Bot. Gard. Herb., 21525).

Montana: Bernice, *E. E. Hubert,* comm. by J. R. Weir (in Mo. Bot. Gard. Herb., 63250); Yellowstone, *F. S. Wolpert,* comm. by J. R. Weir, 3934 (in Mo. Bot. Gard. Herb., 55179).

Colorado: Pike's Peak, *G. G. Hedgcock,* comm. by C. J. Humphrey, 2543 (in Mo. Bot. Gard. Herb., 20783).

Idaho: Priest River, *J. R. Weir, 618* (in Mo. Bot. Gard. Herb., 63200).

British Columbia: Kootenai Mts., near Salmo, *J. R. Weir, 512* (in Mo. Bot. Gard. Herb., 3772); Sidney, *J. Macoun, 34, 42* (in Mo. Bot. Gard. Herb., 55341, 55345).

Washington: Bingen, *W. N. Suksdorf, 703.*

Oregon: Grant's Pass, *J. R. Weir, 8687* (in Mo. Bot. Gard. Herb., 63199).

New Mexico: Tyom Experiment Station, *W. H. Long, 21898* (in Mo. Bot. Gard. Herb., 55121).

46. P. affinis Burt, n. sp.

Name without description in Peck, N. Y. State Mus. Bul. **54**: 954. 1902.

Type: in Burt Herb.

Fructifications broadly effused, membranaceous, adnate, separable when moistened, drying light buff to pinkish buff and light pinkish cinnamon, often cracked and showing the paler subiculum in the crevices, the margin paler, radiately fibrillose; in section not colored, 300–500 μ thick, with the hyphae hyaline, 3–5 μ in diameter, not at all incrusted, arranged densely and longitudinally in a broad layer along the substratum and then ascending obliquely into the hymenial layer; cystidia incrusted or not incrusted, 30–60 × 5–8 μ, protruding up to 30 μ, occurring in the hymenial layer only; spores white in a spore collection, even, 4½–6 × 2½–3 μ.

Fructifications 3–20 cm. long, 2–4 cm. broad.

On bark and decorticated logs and limbs of frondose species. Canada to New York and westward to Oregon, and also in Europe. July to October. Common.

P. affinis is related in aspect to *P. laevis* and has hyphae of the same diameter and arrangement as those of the latter species but not at all incrusted. The fructifications of *P. affinis* are usually thicker than those of *P. laevis*, less adnate to the substratum, paler and more cracked. Pale specimens of *P. sanguinea* crack into somewhat similar areas but show a somewhat colored, floccose subiculum in the fissures. The hyphae of *P. affinis* are of smaller diameter than those of *P. velutina*.

Specimens examined:

Exsiccati: Reliq. Farlowianae, 343, under the name *Peniophora laevis*.

Sweden: *L. Romell, 123, 124*, both under the name *P. velutina*.

Austria: Tirol, *V. Litschauer*, under the name *P. laevis*.

France: Allier, *H. Bourdot, 8579*, under the name *P. laevis*.

Canada: *J. Macoun, 76*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 57510).

Quebec: Hull, *J. Macoun, 220*.

Ontario: Jefferson, *G. H. Graham*, comm. by Univ. Toronto Herb., 674 (in Mo. Bot. Gard. Herb., 44924).

Maine: Kittery Point, *R. Thaxter & E. A. Burt.*

New Hampshire: Chocorua, *W. G. Farlow, 35* and two unnumbered specimens in Burt Herb., Reliq. Farlowianae, 343, and *C 36, 41, 69* (in Mo. Bot. Gard. Herb., 43964, 43969, 43970 respectively), *E. A. Burt,* three gatherings; North Conway, *L. O. Overholts, 5106* (in Mo. Bot. Gard. Herb., 56356).

Vermont: Middlebury, *E. A. Burt,* type and another gathering.

Massachusetts: North Scituate, *W. G. Farlow.*

New York: Albany, *H. D. House* (in N. Y. State Mus. Herb. and Mo. Bot. Gard. Herb., 14835); East Galway, *E. A. Burt,* six gatherings; Jamesville, *L. M. Underwood* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 63419); Karner, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 54348, 54352, 54371); Oneida, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 59681); Snyder, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55757); Syracuse, *L. M. Underwood, 116* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61485); West Fort Ann, *S. H. Burnham, 12* (in Mo. Bot. Gard. Herb., 44002).

Tennessee: Elkmont, *C. H. Kauffman, 68* (in Mo. Bot. Gard. Herb., 1680).

Illinois: Glencoe, *E. T. & S. A. Harper, 650, 820.*

Wisconsin: Madison, *C. J. Humphrey, 2159* (in Mo. Bot. Gard. Herb., 4597).

Oregon: Corvallis, *W. A. Murrill, 1011,* comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55714).

Jamaica: *Farr, 1617* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61489). This reference is doubtful for the hymenium is in poor condition.

47. P. inflata Burt, n. sp.

Type: in Burt Herb. and probably in N. Y. Bot. Gard. Herb.

Fructifications effused, thin, tender, soft, membranaceous, separable, brittle when dry and cream color to cream-buff, the subiculum and margin white and cottony; in section 150 μ thick, not colored, 2-layered, consisting of (1) a layer next to substratum 75 μ thick of loosely arranged, thin-walled, lax, hyaline hyphae 2½–3 μ in diameter bearing short lateral branches, each with 2

moniliform inflations, and of (2) a hymenial layer of erect hyphae densely arranged, and of numerous cystidia in all regions of this layer; no gloeocystidia; cystidia incrusted or not incrusted, 15–24 × 3–3½ μ, protruding up to 18 μ beyond the basidia; spores colorless, even, 3 × 2–2½ μ, flat on one side, copious.

Fructifications 3–4 cm. long, 1–1½ cm. wide.

On very rotten wood. Jamaica. December. Probably rare.

P. inflata is so loosely attached to the substratum that careful handling is necessary to prevent fructifications from becoming detached from the wood during examination. The pair of moniliform inflations on short lateral branches of hyphae of the hyphal layer shows distinctly in sectional preparation and promises to be as helpful a character in the recognition of this species as the details of hyphal structure in *Stereum purpureum*, *Corticium investiens*, *Grandinia granulosa*, and others.

Specimens examined:

Jamaica: Hope Gardens, *W. A. Murrill*, *4*, type, comm. by N. Y. Bot. Gard. Herb.

48. P. Sheari Burt, n. sp.

Type: in Burt Herb.

Fructification effused, rather thick, membranaceous, drying pinkish buff, somewhat tubercular, somewhat velvety, not waxy, the margin becoming somewhat free and curling up in drying, separable from the substratum when moistened; in section 800–1000 μ thick, not colored, 2-layered, the layer next to the substratum up to 800–900 μ broad and composed of densely interwoven, hyaline hyphae not incrusted, not nodose-septate, thick-walled, 3 μ in diameter, the hymenial layer 100–150 μ broad, containing throughout great numbers of slender, rough-walled or minutely incrusted cystidia 30–45 × 4–6 μ; no gloeocystidia; basidia with 4 sterigmata; spores hyaline, even, 10–12 × 6–7 μ.

Fructifications 3 mm.–2 cm. in diameter.

On dead *Alnus*. Blue Mt., Oregon. August. Probably rare and local.

The fructifications apparently originate as outgrowths from lenticels in the bark and spread laterally over more or less circular areas and become confluent. The occurrence on *Alnus*, tuber-

cular surface, numerous and small cystidia confined to the hymenial layer, and spores 12 × 6 μ form a distinctive group of characters.

Specimens examined:

Oregon: Blue Mt., *C. L. Shear, 797*, type.

49. P. Ravenelii Cooke, Grevillea **8**: 21. *pl. 124, f. 12.* 1879; Sacc. Syll. Fung. **6**: 643. 1888; Massee, Linn. Soc. Bot. Jour. **25**: 150. 1889.

Type: in Kew Herb.

Fructifications broadly effused, adnate, thin, small pieces separable when moistened, becoming pale pinkish buff to pinkish buff in the herbarium, and somewhat cracked, the margin thinning out; in section 100–300 μ thick, not colored, composed of erect and densely interwoven hyaline hyphae and very numerous cystidia in all regions of the fructifications and having a somewhat layered arrangement in thick specimens; no gloeocystidia; cystidia heavily and coarsely incrusted, conical, with apex obtuse or barely acute, 30–40 × 12–18 μ when deeply immersed, or 30 × 8–10 μ in the hymenium; spores white in a spore collection, even, 4–5 × 2–3 μ.

Fructifications 2–8 cm. long, 1–3 cm. wide.

On bark and wood of decaying logs of *Quercus* and other frondose species. District of Columbia to Mexico, in the Island of Guam, and in Japan. July to January. Frequent.

P. Ravenelii is distinguished by its small spores, coarsely incrusted, short cystidia with broad base, and absence of gloeocystidia. *P. Roumeguerii* is similar in aspect but becomes much thicker and has longer, slenderer, and more taper-pointed cystidia and is more distinctly layered.

Specimens examined:

Exsiccati: Ravenel, Fungi Am., 720, under the name *Corticium laeve;* Ravenel, Fungi Car. **2**: 39, under the name *Corticium laeve.*

District of Columbia: Takoma Park, *C. L. Shear, 1345.*

South Carolina: *H. W. Ravenel*, type (in Kew Herb.), and in Ravenel, Fungi Car. **2**: 39.

Georgia: Darien, *H. W. Ravenel*, in Ravenel, Fungi Am., 720;

Tallulah Falls, *A. B. Seymour*, comm. by W. G. Farlow, 13 (in Mo. Bot. Gard. Herb., 44597).

Florida: Brooksville Hammock, *W. A. Murrill, 166*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62115); Cocoanut Grove, *R. Thaxter, 96* (in Farlow Herb., and Mo. Bot. Gard. Herb., 43924); Daytona, *R. A. Harper, 7* (in Mo. Bot. Gard. Herb., 54539); New Smyrna, *W. A. Murrill, 6*, comm. by N. Y. Bot. Gard. Herb., 62087.

Alabama: Auburn, *F. S. Earle & C. F. Baker* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61345).

Louisiana: Bogalusa, *C. J. Humphrey, 5495* (in Mo. Bot. Gard. Herb., 13882); St. Martinville, *A. B. Langlois, 2689, 2693* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61457, 61436), and *2692, ar, as, bp, bs, ci*, and *co*.

Mexico: Orizaba, *W. A. & E. L. Murrill, 765*, comm. by N. Y. Bot. Gard. Herb., 54647.

Island of Guam: *Edwards*, comm. by J. R. Weir, 10775 (in Mo. Bot. Gard. Herb., 56239).

Japan: Prov. Awaji, Mt. Mikuma, *A. Yasuda, 39, 56, 79* (in Mo. Bot. Gard. Herb., 56156, 56159, 56313).

50. P. Roumeguerii Bresadola in litt., n. comb.

Corticium Roumeguerii Bresadola, Fungi Trid. **2**: 36. *pl. 144, f. 1.* 1892; Roumeguère, Rèv. Myc. **15**: 31 pag. sep. *pl. 136, f. 13 b.* 1893; Sacc. Syll. Fung. **11**: 125. 1895.—*Kneiffia Roumeguerii* Bresadola, Ann. Myc. **1**: 102. 1903.—*Corticium Mollerianum* Bresadola in Saccardo, Soc. Brot. Bol. **11**: 13. 1892.—*Peniophora Molleriana* (Bres.) Saccardo, Soc. Brot. Bol. **11**: 13. 1892; Sacc. Syll. Fung. **11**: 128. 1895; v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **117**: 1092. 1908; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 401. 1913; Wakefield, Brit. Myc. Soc. Trans. **5**: 132. 1915; Rea, Brit. Basid. 693. 1922.

Type: type distribution in Roumeguere, Fungi Gallici, 506.

Fructifications broadly effused, adnate, becoming rather thick, small pieces separable when moistened, whitish at first, becoming pale pinkish buff to pinkish buff in the herbarium, the margin thinning out; in section 100–700 μ thick, not colored, becoming

layered in thick specimens, composed of erect and interwoven, closely agglutinate hyphae 2–3 μ in diameter and of very numerous cystidia; no gloeocystidia; cystidia incrusted, 35–80 × 8–12 μ, acute, numerous in all layers except next to the substratum; spores hyaline, even, 4–6 × 2–3 μ.

Fructifications 3–8 cm. long, 1–4 cm. wide.

On bark of logs of *Quercus*, *Eucalyptus*, *Citrus*, *Ficus*, and other frondose species, rarely on conifers. In Europe, and in Alabama, Louisiana, Missouri, Idaho, British Columbia to California, and in the West Indies. May to February. Not common.

P. Roumeguerii is possibly a synonym of *P. Ravenelii*, as I formerly regarded it, but the numerous specimens which have been studied lead me to believe that while of the same aspect, spore characters, and substratum, *P. Roumeguerii* eventually becomes twice as thick as *P. Ravenelii*, more closely agglutinate, and its cystidia longer and slenderer in proportion to their thickness. The error of v. Höhnel & Litschauer, *loc. cit.*, in misstating the year of publication of *P. Molleriana* as 1891 has probably led more recent European authors into reducing *P. Roumeguerii* to synonymy while it really has priority.

Specimens examined:

Locality not stated: *G. Bresadola*, authentic specimen under the name *Peniophora Roumeguerii* Bres.

Italy: Trient, *G. Bresadola*, authentic specimen of *Peniophora Molleriana*.

France: Aveyron, *A. Galzin, 17908*, comm. by H. Bourdot, 16898.

England: Symond's Yat, *E. M. Wakefield* (in Mo. Bot. Gard. Herb., 44759).

Alabama: Montgomery County, *R. P. Burke, 364* (in Mo. Bot. Gard. Herb., 57232).

Louisiana: Baton Rouge, *Edgerton & Humphrey*, comm. by C. J. Humphrey, 5646, 5648; St. Martinville, *A. B. Langlois, 1346*, comm. by W. G. Farlow, 2675, 2683, 2970, cj, ck, and another specimen, comm. by Lloyd Herb., 3042.

Missouri: Creve Coeur Lake, *L. O. Overholts, 3165* (in Mo. Bot. Gard. Herb., 5709).

Idaho: Santa, *E. E. Hubert*, comm. by J. R. Weir, 12001 (in Mo. Bot. Gard. Herb., 63363).

British Columbia: Sidney, *J. Macoun, 379* (in Mo. Bot. Gard. Herb., 55330).

Oregon: Tidewater, *S. M. Zeller, 1983* (in Mo. Bot. Gard. Herb., 58760).

California: Berkeley, *C. J. Humphrey, 5987, 5990;* Redding, *C. J. Humphrey, 6038;* Santa Barbara, *O. M. Oleson, 10.*

Cuba: *Horne* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61464).

Porto Rico: Rio Piedras, *J. A. Stevenson, 5792* (in Mo. Bot. Gard. Herb., 54693); Sabana Llana, *J. A. Stevenson, 6058* (in Mo. Bot. Gard. Herb., 54686); Vega Baja, *J. A. Stevenson, 5693* (in Mo. Bot. Gard. Herb., 54692).

51. P. hiulca Burt, n. sp.

Type: in Burt Herb. and probably in N. Y. Bot. Gard. Herb.

Fructifications long and widely effused, thick, membranaceous, separable when moistened, becoming light buff to warm buff in the herbarium, widely cracked, the margin determinate, somewhat tomentose; in section 250–1400 μ thick, not colored, 2-layered, with a very thick layer next to the substratum of densely interwoven, longitudinally arranged and somewhat ascending thin-walled, hyaline hyphae 3–4 μ in diameter, not incrusted, not nodose-septate and with the hymenial layer thinner —only 100–200 μ thick—and containing in all portions very numerous cystidia; no gloeocystidia; cystidia incrusted, somewhat conical, 30–50 × 6–12 μ, very numerous, wholly immersed or protruding up to 30 μ; basidia with 4 sterigmata; spores hyaline, even, 4½–5 × 3 μ.

Fructifications 4–12 cm. long, 2–4 cm. wide—perhaps larger for all specimens received are fragmentary.

On bark and decaying wood of frondose species. Mexico and the West Indies. November to May.

P. hiulca has large, conspicuous fructifications with somewhat the color and aspect of *P. mutata* and *P. Roumeguerii.* The absence of gloeocystidia and the smaller spores distinguish it from the former, and the comparatively thin hymenial layer to which cystidia are restricted and the very thick layer of interwoven hyphae running in all directions, rather than predominantly erect, from *P. Roumeguerii.*

Specimens examined:

Mexico: Jalapa, *W. A. & E. L. Murrill, 192*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54549).

Bermuda: *S. Brown, N. L. Britton & F. J. Seaver, 1507*, comm. by N. Y. Bot. Gard. Herb.

Jamaica: Castleton Gardens, *W. A. & E. L. Murrill, 71*, type, comm. by N. Y. Bot. Gard. Herb.; Mandeville, *A. E. Wight*, comm. by W. G. Farlow.

52. P. phosphorescens Burt, n. sp.

Type: in Burt Herb. and probably in Farlow Herb.

Fructifications effused, membranaceous, separable, becoming clay-color to avellaneous in the herbarium, and widely cracked into rectangular portions about 5 mm. in diameter, which curl up somewhat from the substratum along the fissures and show the whitish, cottony subiculum, the hymenium waxy, somewhat tubercular and minutely spotted in the type, the margin thinning out; in section 300–500 μ thick, not colored, 2-layered, with the layer next to the substratum composed of loosely interwoven hyphae 3–3½ μ in diameter, the hymenial layer up to 200 μ thick, composed of densely arranged hyphae and cystidia; no gloeocystidia; cystidia incrusted, 70–100 × 12–18 μ, fusiform, acute, sometimes tilted, immersed throughout the hymenial layer, few protruding; spores hyaline, even, subglobose, 4–5 × 3–3½ μ; said to be phosphorescent when collected.

Fructifications probably large, for collections consist of fragments 7 × 1½ cm., and 1½–3 cm. in diameter.

On rotten wood of fence post and decaying bark of frondose species. Jamaica. October to December.

P. phosphorescens may be recognized by the thick, clay-colored fructifications which contract in drying so as to crack into rectangular masses about 5 mm. in diameter, separated from one another by rather wide fissures. The thick, hymenial portion of each mass is so weakly attached to the substratum by the loose subiculum that these masses curl upward along their edges and may occasionally become wholly detached. The cystidia are suggestive of those of *P. flavido-alba* but all other characters of these two species are different. Phosphorescence has been recorded for but few fungi.

Specimens examined:

Jamaica: *A. E. Wight*, type, comm. by W. G. Farlow; Castleton Gardens, *F. S. Earle, 240*, comm. by N. Y. Bot. Gard. Herb.

53. P. sanguinea (Fr.) Bresadola in v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **115**: 1588, 1589. 1906; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 395. 1913; Rea, Brit. Basid. 690. 1922.

Thelephora sanguinea Fries, Elenchus Fung. **1**: 203. 1828.—*Corticium sanguineum* Fries, Epicr. 561. 1838; Hym. Eur. 650. 1874; Icones Hym. **2**: 97. *pl. 198, f. 2.* 1877; Sacc. Syll. Fung. **6**: 612. 1888; Wakefield, Brit. Myc. Soc. Trans. **4**: 119. *pl. 3, f. 18–20.* 1913.—*Kneiffia sanguinea* (Fries) Bresadola, Ann. Myc. **1**: 101. 1903.—*Corticium glabrum* Berkeley & Curtis, Grevillea **1**: 178. 1873; Sacc. Syll. Fung. **6**: 620. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 142. 1890.—(In part) *Corticium Petersii* Berkeley & Curtis, Grevillea **1**: 177. 1873.

Fructification effused, somewhat membranaceous, tender, dragon's-blood red, substance arachnoid, the margin byssoid or fibrillose and often connected with mycelial strands of blood-red color which stain the wood red, hymenium drying light buff and pinkish buff to buff-pink; in section 200–500 μ thick, not colored, with the hyphae loosely arranged, 3–6 μ in diameter, and with some granule-incrusted, rarely nodose-septate; cystidia hair-like, not incrusted usually, about 4½ μ in diameter, protruding 20–30 μ; spores white in spore collection, even, 4–5 × 2–2½ μ.

Fructifications 2–10 cm. long, 1–4 cm. wide.

On dead wood and fallen branches especially of conifers. Europe, New Hampshire to Louisiana, and in Oregon. July to January. Infrequent.

P. sanguinea and *P. miniata* may be recognized by the blood-red color of the young fructifications, the more or less numerous red mycelial strands, and the wood stained red. Later in fertile stage the hymenium tends toward a buff color with a tinge of red. In section *P. sanguinea* shows granule-incrusted hyphae more or less numerous among other even-walled hyphae, while *P. miniata* contains no incrusted hyphae.

Specimens examined:

Exsiccati: Ell. & Ev., Fungi Col., 1020, under the name *Corticium radiosum*.
Sweden: *L. Romell, 130;* Stockholm, *L. Romell, 136*.
Austria: Tirol, *V. Litschauer*.
France: *F. Fautrey*, from Lloyd Herb., 3308.
New Hampshire: Chocorua, *W. G. Farlow, 10, E. A. Burt, 3, 4*.
New York: Hudson Falls, *S. H. Burnham, 21* (in Mo. Bot. Gard. Herb., 54490); Karner, *H. D. House, 14.157* (in Mo. Bot. Gard. Herb., 44704); Oneida, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 57434); Wymantskill, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 56051).
New Jersey: Newfield, *J. B. Ellis*, in Ell. & Ev., Fungi Col., 1020.
Pennsylvania: State College, *L. O. Overholts, 3422* (in Mo. Bot. Gard. Herb., 54476).
South Carolina: Society Hill, types of *Corticium glabrum*, Curtis Herb., 2404 (in Curtis Herb.) and 3719 (in Kew Herb.).
Florida: *W. W. Calkins, 845* (in Burt Herb., Farlow Herb., and Mo. Bot. Gard. Herb., 63421).
Alabama: *Peters, 847*, under the name *Corticium miniatum* (in Curtis Herb., 5225), and *Peters, 473*, one of the types of *Corticium Petersii* (in Curtis Herb., 4509).
Louisiana: St. Martinville, *A. B. Langlois, 2704*.
Oregon: Corvallis, *S. M. Zeller, 1860* (in Mo. Bot. Gard. Herb., 56868).

54. P. limonia Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications broadly effused, compact, fleshy-membranaceous, small pieces separable when moistened, cream-buff, not cracked, the margin byssoid and with some radiating, cream-buff mycelial strands; in section 200 μ thick, not perceptibly colored, 2-layered next to the substratum, with very coarse, heavily incrusted, loosely arranged, longitudinally interwoven hyphae 6–9 μ in diameter, and with the hymenial layer 75 μ thick and composed of erect tissues; no gloeocystidia; cystidia not incrusted, 45 × 4½ μ, tapering to a sharp apex, protruding 20–27 μ beyond the basidia; spores hyaline, even, 3–4 × 2½ μ.

Fructifications 2½–4 cm. long, 1–1½ cm. wide.

On bark of decaying *Robinia neo-mexicana*. New Mexico. August.

P. limonia has the color of *P. sulphurina* and *P. carnosa* but differs from both by its occurrence on frondose bark and very coarse, heavily incrusted hyphae. The hymenial layer does not crack and flake away from the substratum like that of *P. sulphurina*. Treatment of sections with potassium hydrate solution causes no color changes.

Specimens examined:

New Mexico: Sulphur Canyon, *W. H. Long, 21405*, type (in Mo. Bot. Gard. Herb., 55146).

55. P. amoena Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications long and broadly effused, thin, adnate, small pieces separable when moistened, cream-color in the herbarium, even, glabrous, the margin thinning out, of finely interwoven hyphae; in section 120 μ thick, not colored, with the hyphae near the substratum compactly interwoven, about 3 μ in diameter; an incrusted subhymenial zone present, formed of numerous incrusted bodies side by side; no gloeocystidia; cystidia of the hymenial surface not incrusted, 7–9 μ in diameter, protruding up to 45 μ; basidia rather large, 25–30 × 5–6 μ, with 4 sterigmata; spores hyaline, even, 12–15 × 4–6 μ, copious.

Fructifications probably large, for pieces broken off at one end and one side are 5–6 cm. long, 1½–2 cm. wide.

On a soft wood of a frondose species. British Columbia.

P. amoena forms cream-colored, somewhat waxy fructifications on decorticated logs of a pale soft wood—perhaps *Populus*. The spores are so large as to afford a valuable specific character.

Specimens examined:

British Columbia: Sidney, *J. Macoun, 7*, type (in Mo. Bot. Gard. Herb., 5766).

56. P. firma Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, rather thick, dry, firm, membranaceous,

small pieces separable when moistened, cream-buff in the herbarium, even, not cracked, the margin thinning out, fibrillose; in section 300–500 μ thick, not colored, with the hyphae 4–6 μ in diameter near the substratum, densely interwoven, ascending and becoming finer, sometimes incrusted towards the hymenial layer; no gloeocystidia; cystidia not incrusted, tapering upward to a sharp point, 4–5 μ at base, protruding 20–35 μ, confined to surface of hymenium, numerous; spores hyaline, even, 4–5 × 2½–3 μ.

Fructifications 2–5 cm. long in pieces broken off at both ends, 3–5 cm. wide.

On rotten wood of *Alnus* (?) and on bark of *Robinia neomexicana*. Washington and Arizona. September and October.

P. firma resembles *P. Roumeguerii* in general aspect but its cystidia are slenderer than those of *P. Roumeguerii*, not incrusted, and present in the hymenial surface only.

Specimens examined:

Washington: Arlington, *C. J. Humphrey, 7609*, type.

Arizona: Santa Catalina Mountains, Coronado National Forest, *G. G. Hedgcock & W. H. Long*, comm. by C. J. Humphrey, 2555 (in Mo. Bot. Gard. Herb., 12262).

57. P. miniata (Berk.) Burt, n. comb.

Thelephora miniata Berkeley in Hooker, Eng. Flora **2**²: 168. 1836; Brit. Fungi, No. 251. 1843. See v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **115**: 1588. 1906.

Type: authentic specimen in Berkeley, Brit. Fungi, 251.

Fructification effused, somewhat membranaceous, tender, English red, substance arachnoid, the margin byssoid or fibrillose and often connected with mycelial strands of blood-red color; hymenium drying pinkish buff to buff-pink and cinnamon-rufous; in section 150–300 μ thick, not colored, the hyphae loosely arranged, 3–6 μ in diameter, not incrusted, rarely nodose-septate; cystidia few, hair-like, not incrusted, 3½–4½ μ in diameter, protruding 20–30 μ; spores hyaline, even, 4–4½ × 2–2½ μ.

Fructifications 2–10 cm. long, 1–2½ cm. broad.

On fallen limbs, usually of conifers. In England, New Hampshire to Louisiana, and in Washington and Oregon. July to December. Infrequent.

The twenty gatherings cited below have been separated from *P. sanguinea* by the absence of incrusted hyphae in their sectional preparations. In the original description of *T. miniata*, Berkeley stated, "This most elegant species differs so much from *T. sanguinea* Fr., in being most highly colored where exposed to light, while in the portions to which light has not free access it is nearly white, and in not tinging the wood whereon it grows with its own color, that an inspection of specimens renders it almost impossible to consider it the same." Fifteen of the twenty specimens referred below to *P. miniata* on account of absence of hyphal incrustation have the hymenium red and only five pinkish buff, while none of the twenty specimens show the wood stained red.

Specimens examined:

Exsiccati: Berkeley, Brit. Fungi, 251, authentic specimen of *Thelephora miniata* Berk.

England: Berkeley, Brit. Fungi, 251.

New Hampshire: Chocorua, *E. A. Burt, 1, 2.*

New York: Albany, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 14830, 55201), and *H. D. House & J. Rubinger* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 17797); Karner, *H. D. House*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 54347, 54357, 54377); Newtonville, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55969, 55989); North Elba, *C. H. Kauffman, 5* (in Mo. Bot. Gard. Herb., 6719); Schuylerville, *C. H. Peck*, comm. by N. Y. State Mus. Herb., T 17, T 25 (in Mo. Bot. Gard. Herb., 54570, 54657).

Georgia: Tallulah Falls, *A. B. Seymour*, from Farlow Herb., D (in Mo. Bot. Gard. Herb., 44609).

Louisiana: St. Martinville, *A. B. Langlois, bu.*

Washington: Chehalis, *C. J. Humphrey, 6273;* Hoquiam, *C. J. Humphrey, 6409.*

Oregon: Granite Pass, *J. R. Weir, 11183* (in Mo. Bot. Gard. Herb., 63252).

58. P. Burtii Romell, n. sp.

Type: in Burt Herb. and Romell Herb.

Fructifications effused, somewhat membranaceous, tender, hymenium drying warm buff usually but sometimes whitish to cartridge-buff, sometimes cracked and showing the cottony substance, the margin byssoid or fibrillose and sometimes connected with antimony-yellow mycelial strands; in section 200–300 μ thick, not colored, with the hyphae loosely arranged, hyaline, rarely nodose-septate, with some incrusting granules in the subhymenium; cystidia hair-like, not incrusted, tapering, 3–4 μ in diameter, protruding up to 25 μ, not numerous; spores hyaline, even, 4–4½ × 2–2½ μ.

Fructifications 2–7 cm. long, 1–2 cm. broad.

On wood and fallen limbs of frondose species in woods. Vermont to Louisiana and in Ohio, Michigan, and Montana. July to October. Rare.

This species is noteworthy by the antimony-yellow or ochraceous mycelial strands or cords which grow from under the bark and connect with the fructifications. The presence of cystidia separates this species from *Corticium sulphureum* which has yellower fructifications and not as large mycelial cords when present.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 933, under the name *Corticium radiosum.*

Vermont: Middlebury, *E. A. Burt.*

Massachusetts: Sharon, *A. P. D. Piguet, 136,* comm. by Farlow Herb. (in Mo. Bot. Gard. Herb., 59627).

New York: Ithaca, *H. H. Whetzel,* comm. by Cornell Univ. Herb., 13760.

New Jersey: Newfield, *J. B. Ellis,* in Ellis, N. Am. Fungi, 933.

Virginia: Crabbottom, *W. A. Murrill, 239* (in N. Y. Bot. Gard. Herb., Burt Herb., and Mo. Bot. Gard. Herb., 61560).

Alabama: Auburn, *Alabama Biological Survey.*

Louisiana: Bogalusa, *C. J. Humphrey, 5472;* St. Martinville, *A. B. Langlois, cl.*

West Virginia: Paw Paw, *C. L. Shear, 1179.*

Ohio: *C. G. Lloyd, 3823,* type.

Michigan: New Richmond, *C. H. Kauffman, 34* (in Mo. Bot. Gard. Herb., 23060).

Montana: Evaro, *J. R. Weir, 415* (in Mo. Bot. Gard. Herb., 14772).

59. P. subapiculata (Bres.) Burt, n. comb.

Corticium subapiculatum Bresadola, Mycologia **17**: 69. 1925. Type: in Weir Herb.

Fructifications broadly effused, adnate, small pieces separable when moistened, waxy, becoming ivory-yellow to pinkish buff in the herbarium, even, only rarely cracked, the margin thinning out, pruinate; in section about 150 μ thick, not colored, composed of interwoven hyaline hyphae 3½–4½ μ in diameter, not incrusted, only rarely nodose-septate; no gloeocystidia; cystidia hair-like, not incrusted, cylindric, obtuse, 3–4½ μ in diameter, protruding 10–40 μ beyond the basidia; spores hyaline, even, 4–6 × 2–3 μ.

Fructifications 8–12 cm. long, 1–4 cm. wide.

On decaying logs of *Pinus*, *Abies*, and *Larix*—usually on the wood. Idaho and British Columbia. June to September.

P. subapiculata resembles *P. Weiri* in color and general aspect but has no gloeocystidia and smaller cystidia and spores.

Specimens examined:

Montana: Evaro, *J. R. Weir, 414* (in Mo. Bot. Gard. Herb., 63720); Kalispell, *E. E. Hubert*, comm. by J. R. Weir, 11957 (in Mo. Bot. Gard. Herb., 63312).

Idaho: Clarkia, *A. S. Rhoades* (in Weir Herb., 16928, type); Coolin, *J. R. Weir, 11086* (in Mo. Bot. Gard. Herb., 63245); Priest River, *J. R. Weir, 52, 130* (in Mo. Bot. Gard. Herb., 63718), and *E. E. Hubert*, comm. by J. R. Weir, 12020 (in Mo. Bot. Gard. Herb., 63375).

British Columbia: Kootenai Mountains, near Salmo, *J. R. Weir, 476* (in Mo. Bot. Gard. Herb., 63719).

60. P. sordida (Karst.) Burt—not in the sense of Brinkmann or Bresadola.

Corticium sordidum Karsten, Soc. pro Fauna et Flora Fennica Meddel. **9**: 65. 1883; Finska Vet.-Soc. Bidrag Natur och Folk **48**: 413. 1889; Sacc. Syll. Fung. **6**: 631. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 140. 1890. Compare v. Höhnel

& Litschauer, K. Akad. Wiss. Wien Sitzungsber. **117**: 1088. 1908.

Type: authentic specimen in Burt Herb.

Fructifications longitudinally effused, small portions separable when moistened, in the herbarium young specimen pale olive-buff and older specimen wood-brown, contracting in drying and cracking into small rectangular masses about 1 mm. in diameter, separated by rather wide crevices and showing the paler floccose subiculum, the margin thinning out; in section 150–300 μ thick, not colored, becoming stratose, each stratum 2-layered, with the layer towards the substratum composed of loosely arranged, suberect, branching hyphae 4½–5 μ, rarely 6 μ, in diameter, not incrusted, not nodose-septate, and the hymenial layer compact, 75 μ thick; no gloeocystidia; cystidia not incrusted, cylindric, obtuse, 4–6 μ in diameter, protruding up to 30 μ, none wholly immersed; spores copious, hyaline, even, 4½–6 × 2–3 μ.

Fructifications 3 cm. × 7 mm. and 2½ × 1 cm. in the two fragmentary pieces from Karsten, 3–10 cm. long, 7–15 mm. wide in an American specimen.

On decorticated wood of *P. sylvestris* and *P. Strobus* on the ground. Finland and New York. October. Rare.

Brinkmann distributed in his "Westfälische Pilze," 8, under the name of *Peniophora sordida* (Karst.) Brinkmann, a specimen which was later referred by Bresadola to *Peniophora serialis*. I have not seen this specimen. Von Höhnel & Litschauer accepted this reference, *loc. cit.*, and placed *Corticium sordidum* Karst. as a synonym of *P. serialis*. The study of other specimens of the *P. serialis* complex shows that none of these others have the structure of authentic *Corticium sordidum* although somewhat resembling the old stage in general aspect. The problem with me for a time was whether *P. cremea* is distinct from *P. sordida*, but *P. cremea* occurs on frondose wood, is not cracked into rectangular, completely separated masses, and has larger cystidia, some of which are incrusted and wholly immersed. The Karsten specimens of *C. sordidum* are in some places composed of a single stratum 150 μ thick of 2 layers and in others of 2 strata with thickness together of 240–300 μ.

Specimens examined:

Finland: Mustiala, *P. A. Karsten*, authentic specimen of *Corticium sordidum*.

New York: Karner, *H. D. House, 14.188* (in Mo. Bot. Gard. Herb., 44722).

61. P. Burkei Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications broadly effused, thin, adnate, membranaceous, tender, small pieces separable when moistened, cream-buff in the herbarium, somewhat tubercular, conforming to the inequalities of the rough bark upon which growing, somewhat cracked in drying, the margin thinning out, of finely interwoven hyphae; in section 120–180 μ thick, not colored, with the hyphae suberect, loosely interwoven, thin-walled, 3 μ in diameter, nodose-septate, not incrusted; no gloeocystidia; cystidia not incrusted, subulate, 50 × 4½–5 μ, protruding up to 20 μ; spores hyaline, even, 6–7 × 4–5 μ, copious.

Fructifications probably large—4 cm. long, 2–2½ cm. wide in pieces broken off at both ends and on one side.

On rough, frondose bark. Alabama. October.

P. Burkei has some resemblance in aspect to *P. cremea* but has a more tubercular hymenium, slenderer and more erect hyphae, and larger spores.

Specimens examined:

Alabama: Montgomery County, *R. P. Burke, 474*, type (in Mo. Bot. Gard. Herb., 57292).

62. P. glebulosa Bresadola, Fungi Trid. **2:** 61. *pl. 170, f. 2.* 1898; Sacc. Syll. Fung. **16:** 195. 1902; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28:** 384. 1913; Rea, Brit. Basid. 688. 1922.

Not *Thelephora calcea* Fries var. *glebulosa* Fries, Elenchus Fung. **1:** 215. 1828.—Not *Corticium calceum* Fries, Epicr. 562. 1838; nor Hym. Eur. 652. 1874.

Type: in Bresadola Herb. and Burt Herb.

Fructifications widely effused, thin, closely adnate, whitish, pinkish buff, pale olive-buff, or cream color, pubescent with the cystidia, becoming cracked into small areas when dry, the margin thinning out; in section 50–200 μ thick, not colored, composed throughout of cystidia and rather erect, interwoven, hyaline,

thin-walled hyphae 1–3 μ in diameter, not incrusted; cystidia thick-walled, with very narrow lumen which is often much larger at apex of cystidium, even where immersed, or sometimes with some granular incrustation near protruding apex, 60–150 × 7–10 μ, protruding up to 50–100 μ, very numerous throughout the fructification, not dissolved by treatment of sections with potassium hydrate; spores white, even, cylindric, slightly curved, 6–9 × 1½–2 μ.

Fructifications 3–15 cm. long, 1–6 cm. wide.

On wood of decaying conifers, rarely on bark, and on frondose species. In Europe, from Canada to New Jersey, in Nebraska, Colorado, Montana and Manitoba to British Columbia and Oregon. May to November. Common locally.

P. glebulosa has distinctive cystidia to which Bourdot & Galzin have given the term cystidioles. These cystidia are elongated, cylindric, even throughout their whole length usually, but sometimes with a little incrusting matter near the apex of the protruding part, and with a very thick wall—so thick that the axial lumen containing protoplasmic contents is merely a line which, however, is often greatly expanded at its peripheral end in the apex of the cystidium where the latter becomes thin-walled and fragile. The cystidia of *P. glebulosa* are not at all dissolved or only partially by the potassium hydrate treatment to which sections are subjected. In the original description Bresadola states that *P. glebulosa* is the same as authentic *Corticium calceum* var. *glebulosum* Fries. I believe this to be an error, for a fragment of authentic *C. calceum* var. *glebulosum* communicated to me by Bresadola and the original specimens so labelled in Fries Herbarium, all of which I studied, have no cystidia whatever and agree in all respects with a true *Corticium* collected at Femsjö, the original station, by Romell and myself.

Specimens examined:

Sweden: Femsjö, *Romell & Burt*, three gatherings; Lappland, *L. Romell, 405;* Stockholm, *L. Romell, 199.*

Austria: Stubai, Tirol, *V. Litschauer.*

Italy: Trient, *G. Bresadola*, type.

England: Symond's Yat, *E. M. Wakefield* (in Mo. Bot. Gard. Herb., 57120).

Canada: Billings Bridge, *J. Macoun, 113.*

Quebec: Hull, *J. Macoun, 246.*

Maine: *W. A. Murrill, 2139½* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61424); Kittery Point, *R. Thaxter & E. A. Burt;* Piscataquis County, *W. A. Murrill, 2142, 2653* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61349, 61441).

New Hampshire: Chocorua, *W. G. Farlow* (in Mo. Bot. Gard. Herb., 19554) and *11.*

Vermont: Middlebury, *E. A. Burt,* four gatherings.

New York: Altamont, *E. A. Burt;* East Galway, *E. A. Burt,* three gatherings; Farmington, *E. Brown, 116* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61451); Ithaca, *G. F. Atkinson, 8236, 8284;* Sandlake, *C. H. Peck,* comm. by N. Y. State Mus. Herb., T 15 (in Mo. Bot. Gard. Herb., 54568).

New Jersey: Newfield, *J. B. Ellis,* under the herbarium name *P. gracillima* (in N. Y. Bot. Gard. Herb., and Burt Herb.).

Nebraska: Long Pine, *C. L. Shear, 1056.*

Colorado: Geneva Creek Canyon, alt. 8000–14000 ft., *F. J. Seaver & E. Bethel* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61467); Golden, *L. O. Overholts, 1752* (in Mo. Bot. Gard. Herb., 54881).

Montana: Bernice, *J. R. Weir, 12000, 12006* (in Mo. Bot. Gard. Herb., 63362, 63366); Darby, *E. E. Hubert,* comm. by J. R. Weir (in Mo. Bot. Gard. Herb., 63248); Hecla, *E. E. Hubert,* comm. by J. R. Weir, 11416 (in Mo. Bot. Gard. Herb., 63263); Libby, *E. E. Hubert,* comm. by J. R. Weir, 11443 (in Mo. Bot. Gard. Herb., 63273).

Idaho: Coeur d'Alene, *J. R. Weir, 11974,* and *E. E. Hubert,* comm. by J. R. Weir, 11991 (both in Mo. Bot. Gard. Herb., 63328 and 63354 respectively); Coolin, *J. R. Weir, 11562* (in Mo. Bot. Gard. Herb., 63301); Priest River, *E. E. Hubert,* comm. by J. R. Weir, 12029 (in Mo. Bot. Gard. Herb., 63381), and *J. R. Weir, 350, 6362* (in Mo. Bot. Gard. Herb., 7853, 55952) and *54.*

Manitoba: Norway House, *G. R. Bisby, 1458, 1464, 1476* (in Mo. Bot. Gard. Herb., 61640, 61646, 61658).

British Columbia: Agassiz, *J. R. Weir, 364* (in Mo. Bot. Gard. Herb., 16407); Comax, *J. Macoun, 622* (in Mo. Bot. Gard. Herb., 55333); Kootenai Mts., Salmo, *J. R. Weir, 485, 538* (in Mo. Bot. Gard. Herb., 17619, 1738); Sidney, *J. Macoun, 22, 41, 64, 97* (in Mo. Bot. Gard. Herb., 5682, 55342, 5742, 55343); Squamish, *J. Macoun* (in Mo. Bot. Gard. Herb., 55180); Vancouver Island, *J. Macoun, 356, 357* (in Mo. Bot. Gard. Herb., 55331, 55332); Victoria, *J. Macoun, 576* (in Mo. Bot. Gard. Herb., 63502).

Washington: Bingen, *W. N. Suksdorf, 699;* Hoquiam, *C. J. Humphrey, 6374;* Kalama, *C. J. Humphrey, 6139;* Renton, *C. J. Humphrey, 6633;* Tacoma, *W. A. Murrill, 145,* comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55726).

Oregon: Corvallis, *S. M. Zeller, 1813* (in Mo. Bot. Gard. Herb., 56333); Eugene, *C. J. Humphrey, 6086.*

63. P. verticillata Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, thick, membranaceous, separable, whitish to ecru-drab in the herbarium, even the margin whitish, rather thick, cottony; in section 1300 μ thick, not colored, consisting of (a) a layer 500 μ thick next to the substratum of densely, longitudinally arranged hyaline hyphae about 3–3½ μ in diameter, and of (b) a zonate hymenial layer 800 μ thick containing many elongated cystidia; no gloeocystidia; cystidia cylindric, 150–200 × 6–7 μ, with 4–9 bands of incrusting matter, protruding up to 45 μ; no spores found.

Fructifications 1½–2½ cm. long, 1–2 cm. wide.

On rotten coniferous wood. Oregon. March.

The cystidia of *P. verticillata* are of the thick-walled cylindric type occurring in *P. glebulosa* but without as narrow a lumen, nor with the latter abruptly, greatly enlarged near the apex. The bands of incrusting matter on the cystidia are a unique character of the type but are not retained in glycerine mounts of sections. The very broad layer of longitudinally arranged hyphae along the substratum and the very thick, separable fructifications tending to ecru-drab are probably the more distinctive characters of this species, which is distinct from *P.* (*Gloeocystidium*) *pallidula.*

Specimens examined:

Oregon: Waltersville, *C. C. Epling & J. B. Shorett, 600*, type, comm. by S. M. Zeller, 2317 (in Mo. Bot. Gard. Herb., 63041).

64. P. crassa Burt, N. Y. State Mus. Rept. **54**: 155. 1901. *Stereum Karstenii* Bresadola, I. R. Accad. Agiati Atti III. **3**: 108. 1897; Bourdot & Galzin, Soc. Myc. Fr. Bul. **37**: 126. 1921.—Not *Peniophora Karstenii* Massee, Linn. Soc. Bot. Jour. **25**: 153. 1889.—Not *Phanerochaete odorata* Karsten, Finska Vet.-Soc. Bidrag Natur och Folk **48**: 427. 1889.—*Corticium ochroleucum*, in part, of Berkeley & Curtis, Grevillea **1**: 165. 1875, but not of Fries.

Type: in Burt Herb.

Fructifications broadly effused, becoming thick, somewhat fleshy, light buff to pinkish buff, separable from the substratum when moistened if thick, the margin somewhat tomentose, determinate; in section 500–1500 μ thick, not colored, 2-layered, with the layer next to the substratum 200–300 μ thick, composed of densely interwoven, rather thick-walled and stiff, non-incrusted hyphae 3–4½ μ in diameter, and with the hymenial layer 300–1200 μ thick, more or less zonate, and composed of erect hyphae and cystidia; no gloeocystidia; cystidia even or sometimes somewhat incrusted, cylindric, flexuous, 100–500 × 4½–6 μ, protruding up to 30 μ beyond the basidia, present in all parts of the hymenial layer, destroyed and dissolved by potassium hydrate treatment of sections; basidia 4-spored; spores white in spore collection, even, curved, 4½–6 × 1½–2 μ.

Fructifications 3–20 cm. long, 1–4 cm. wide.

On decorticated, decaying logs of *Pinus, Abies, Picea, Tsuga*, and *Pseudotsuga*. In Europe and from Canada to Alabama and westward to the Pacific states. Common.

P. crassa is certainly cogeneric with *P. glebulosa*, belongs in the same group of species, occurs on the same substrata and is probably equally destructive to wood. Its fructifications are thicker than those of *P. glebulosa* and crack into larger masses. The cystidia have thinner walls and larger lumen than those of *P. glebulosa* and are noteworthy for the destructive action of potas-

sium hydrate on them, so that it can not be safely used in clearing and swelling the sections. Lactic acid should be used instead.

I have included under *P. crassa* the two European specimens of *Stereum Karstenii* cited below, because of agreement in all characters except the much greater thickness of the latter and their curling away from substratum at the margin and separation of the whole fructification in a sheet-like mass. American specimens of *P. crassa* range from 500 to 1000 μ thick and have the margin closely adnate to the substratum. Perhaps there is specific difference between *P. crassa* and *Stereum Karstenii*.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 331, under the name *Corticium ochroleucum* var. *spumeum;* Ravenel, Fungi Car. **3**: 33, under the name *Corticium ochroleucum.*

Hungary: *A. Kmet,* type of *Stereum Karstenii* from Bresadola.

France: Aveyron, *A. Galzin, 20064,* comm. by H. Bourdot, 20799.

Canada: *J. Macoun, 42;* Quebec, *J. Macoun, 260;* Ottawa, *J. Macoun, 248,* in part.

New Hampshire: Chocorua, *W. G. Farlow, 23,* and an unnumbered specimen.

Vermont: Middlebury, *E. A. Burt,* two gatherings; Ripton, *E. A. Burt,* type.

Massachusetts: Magnolia, *W. G. Farlow, e;* Sharon, *A. P. D. Piguet, 139,* comm. by Farlow Herb. (in Mo. Bot. Gard. Herb., 59360).

New York: Floodwood, *E. A. Burt, C. H. Peck, 2;* Ithaca, *G. F. Atkinson, 8008;* Keene, *C. H. Peck,* comm. by N. Y. State Mus. Herb., T 1 (in Mo. Bot. Gard. Herb., 54554); North Elba, *C. H. Peck,* comm. by N. Y. State Mus. Herb., T 9 (in Mo. Bot. Gard. Herb., 54555); Sylvan Beach, Oneida County, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 7460, 8293).

New Jersey: Newfield, *J. B. Ellis,* in Ellis, N. Am. Fungi, 331.

Pennsylvania: State College, *L. O. Overholts, 3631* (in Mo. Bot. Gard. Herb., 54703).

North Carolina: *H. W. Ravenel, 1521* (in Curtis Herb., 1763, under the name *Corticium ochroleucum* var. *erimosum*).

South Carolina: *H. W. Ravenel,* in Ravenel, Fungi Car. **3**: 33,

and (in Curtis Herb., 2169, under the name *Corticium ochroleucum*).

Alabama: Auburn, comm. by Alabama Biological Survey.

Idaho: Addie, *E. E. Hubert*, comm. by J. R. Weir, 11976 (in Mo. Bot. Gard. Herb., 63329); Coolin, *J. R. Weir, 11558* (in Mo. Bot. Gard. Herb., 63299); Priest River, *J. R. Weir, 108, 378, 6351* (in Mo. Bot. Gard. Herb., 16060, 21353, 55951) and *3, 24, 46, 50, 56*.

British Columbia: Kootenai Mts., near Salmo, *J. R. Weir, 455, 498* (in Mo. Bot. Gard. Herb., 8760, 21632); Revelstoke, *C. W. Dodge, 1654* (in Mo. Bot. Gard. Herb., 58788); Sidney, *J. Macoun, 63, 393* (in Mo. Bot. Gard. Herb., 5741, 55325).

Washington: Kalama, *C. J. Humphrey, 6214* (in Mo. Bot. Gard. Herb., 20431).

Arizona: Flagstaff, *W. H. Long, 21386* (in Mo. Bot. Gard. Herb., 55140); Fort Valley Experiment Station, *W. H. Long, 19624* (in Mo. Bot. Gard. Herb., 20133).

65. P. subalutacea (Karst.) v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **115**: 1601. 1906; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 387. 1913; Wakefield, Brit. Myc. Soc. Trans. **5**: 133. 1914; Rea, Brit. Basid. 688. 1922.

Corticium subalutaceum Karsten, Soc. pro Fauna et Flora Fennica Meddel. **9**: 65. 1883; Finska Vet.-Soc. Bidrag Natur och Folk **48**: 414. 1889; Sacc. Syll. Fung. **6**: 636. 1888; v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **115**: 1560. 1906.—*Kneiffia subalutacea* (Karsten) Bresadola, Ann. Myc. **1**: 104. 1903.

Type: authentic specimen or perhaps part of type in Burt Herb.

Fructifications long and widely effused, very thin, closely adnate, pale olive-buff to pinkish buff in the herbarium, hymenium loose and rather rough under a lens, the margin thinning out; in section 30–100 μ thick, not colored, with the hyphae interwoven, rather rigid and thick-walled, about 2½ μ in diameter, not incrusted, cylindric, thin-walled, 4½–6 μ, protruding up to 60 μ beyond the basidia, often starting from the substratum, sometimes somewhat clustered at slight elevations of the hymenium;

spores hyaline, even, narrowly cylindric, slightly curved, about 4½–7 × 1½ μ.

Fructifications 3–10 cm. long, 1–3 cm. wide.

On decaying pine wood. Europe, New Jersey to Louisiana, and in Washington. July to March. Rare.

The cystidia of *P. subalutacea* place it in the group with *P. glebulosa* and *P. crassa*. It is thinner than either of these. It may be distinguished from thin forms of the former by the thin-walled cystidia which have a lumen of nearly uniform diameter which is not abruptly and greatly enlarged near the apex of the cystidium.

Specimens examined:

Sweden: Femsjö, *E. A. Burt.*
Finland: Mustiala, *P. A. Karsten*, authentic specimen.
Poland: *Eichler*, comm. by G. Bresadola.
Austria: Tirol, *V. Litschauer.*
England: Baslow Foray, *A. D. Cotton*, comm. by E. M. Wakefield (in Mo. Bot. Gard. Herb., 44583).
France: Aveyron, *A. Galzin, 2444*, comm. by H. Bourdot, 8007.
New Jersey: Newfield, *J. B. Ellis, 7510*, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 1794).
Maryland: Takoma Park, *C. L. Shear, 1030.*
Alabama: Montgomery County, *R. P. Burke, 635* (in Mo. Bot. Gard. Herb., 63071).
Louisiana: St. Martinville, *A. B. Langlois, 0.*
Washington: Mt. Paddo, *W. N. Suksdorf, 726.*

66. P. odorata (Karsten) Burt, n. comb.

Phanerochaete odorata Karsten, Finska Vet.-Soc. Bidrag Natur och Folk **48**: 427. 1889. Not *Stereum odoratum* Fries, Epicr. 553. 1838.—Not *Stereum Karstenii* Bresadola, I. R. Accad. Agiati Atti III. **3**: 108. 1897.

Type: in Burt Herb. from Karsten and probably in Karsten Herb.

Fructifications narrowly effused, small, pulvinate, somewhat convex, becoming longitudinally confluent, adnate, dry, felty, cartridge-buff to pale pinkish buff, velvety, the margin thick, entire; in section 500–1000 μ thick, not colored, at length zonate

or stratose, composed of a layer next to the substratum of interwoven, tough, hyaline hyphae 3–4 μ in diameter, and of 1–4 hymenial layers; no gloeocystidia; cystidia not incrusted, cylindric, 80–150 × 6–9 μ, protruding up to 80 μ beyond the basidia, not destroyed by potassium hydrate treatment; basidia with 4 sterigmata; spores hyaline, even, 12–15 × 4–6 μ, copious.

Fructifications 5 mm.–2½ cm. long, 3–10 mm. wide, rarely 5–10 cm. long by confluence.

On decorticated decaying wood and fence rails of *Pinus albicaulis*, *P. contorta*, *P. flexilis*, *P. Murrayana*, *P. silvestris*, *Abies grandis*, *Larix*, *Pseudotsuga*, and *Thuja*. In northern Europe, and in Wyoming, Montana, Idaho, British Columbia, Washington, and Arizona. Frequent.

P. odorata may be recognized by its small, thick, pulvinate, dry, velvety, pallid fructifications on old, weathered, blackened, coniferous wood, by large spores, and stratose fructifications which have even cystidia not affected by the potassium hydrate treatment of sections. Karsten referred his specimens to *Stereum odoratum* Fries, and Bresadola included the Karsten specimens under his *Stereum Karstenii* Bres., of which I regard the type to be a gathering made by Kmet in Hungary.

Specimens examined:

Finland: Mustiala, *P. A. Karsten*, type of *Phanerochaete odorata*.

Sweden: Bedaro, *L. Romell, 412;* Lappland, *L. Romell, 413;* Stockholm, *L. Romell, 369*.

Montana: Anaconda, *J. R. Weir, 583* (in Mo. Bot. Gard. Herb., 63173); Bernice, *E. E. Hubert*, comm. by J. R. Weir, 12011 (in Mo. Bot. Gard. Herb., 63322); Hecla, *E. E. Hubert*, comm. by J. R. Weir, 11405 (in Mo. Bot. Gard. Herb., 63260); Choteau, *J. A. Hughes*, comm. by J. R. Weir, 5824 (in Mo. Bot. Gard. Herb., 55649); Libby, *E. E. Hubert*, comm. by J. R. Weir, 11351 (in Mo. Bot. Gard. Herb., 63259); Melrose, *E. E. Hubert*, comm. by J. R. Weir, 11427, 11433, 11439 (in Mo. Bot. Gard. Herb., 63261, 63274, 63279); West Butte, *J. A. Hughes*, comm. by J. R. Weir, 5496 (in Mo. Bot. Gard. Herb., 55647).

Wyoming: Fox Park, *J. R. Weir, 10018* (in Mo. Bot. Gard. Herb., 55789).

Idaho: Bonanza, *G. G. Hedgcock*, comm. by C. J. Humphrey,

2527, in part; Coolin, *J. R. Weir, 11526* (in Mo. Bot. Gard. Herb., 63291); Priest River, *E. E. Hubert*, comm. by J. R. Weir (in Mo. Bot. Gard. Herb., 63258).

British Columbia: Kootenai Mts., Salmo, *J. R. Weir, 536* (in Mo. Bot. Gard. Herb., 22598).

Washington: Mt. Paddo, *W. N. Suksdorf, 729*.

Arizona: Coronado National Forest, Santa Catalina Mountains, *G. G. Hedgcock & W. H. Long*, comm. by C. J. Humphrey, 2544 (in Mo. Bot. Gard. Herb., 63534).

67. P. pilosa Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, thin, closely adnate, hypochnoid, becoming pale olive-buff in the herbarium, the margin thinning out; in section 40–60 μ thick, not colored, composed of loosely arranged, thin-walled hyphae 2½–3 μ in diameter, not incrusted, and of cystidia starting from the substratum; no gloeocystidia; cystidia not incrusted, thin-walled, cylindric, 60–100 × 4½–7 μ, protruding up to 70 μ beyond the basidia, often constricted near the tip and terminating in an ovoid-shaped body; basidia 4-spored; spores hyaline, even, 6–8 × 4–4½ μ, copious.

Fructifications fragmentary, with the largest fragment 2½ cm. long, 1 cm. wide.

On decaying coniferous wood. New York and Alabama. Probably rare.

P. pilosa forms a gray, downy covering on old weathered pine wood, with the basidia not forming a compact hymenium. In aspect this species somewhat resembles *P. tenuis* but there are no gloeocystidia, and the numerous long, cylindric cystidia, sometimes terminating in a single spore-shaped end and sometimes in a short row of 2 or 3, are distinctive.

Specimens examined:

New York: East Galway, *E. A. Burt;* Ithaca, *G. F. Atkinson, 14415*, type.

Alabama: Montgomery, *R. P. Burke, 154* (in Mo. Bot. Gard. Herb., 3650).

68. P. Peckii Burt, n. sp.

Type: in Burt Herb. and probably in N. Y. State Mus. Herb.

Fructifications broadly effused, somewhat membranaceous, separable from the substratum in small portions when moistened, thin, becoming cartridge-buff to cream-buff in the herbarium, not shining, cracking in drying, the margin thinning out; in section 60–360 μ thick, not colored, composed throughout of suberect hyphae about 4 μ in diameter, not incrusted and occasionally nodose-septate, of elongated flexuous cystidia, and of great numbers of subglobose, even chlamydospores 4½–5 × 4 μ; cystidia not incrusted, flexuous, elongated, with somewhat the aspect of gloeocystidia, 30–100 × 6–9 μ, in all regions of fructification, many starting from the substratum, tapering upward, protruding up to 40 μ beyond the basidia; basidia with 4 sterigmata; basidiospores hyaline, even, subglobose, 5–6 × 4½ μ.

Fructifications 2–6 cm. long, 1–3 cm. wide.

On bare ground in woods and on bark and wood of decaying *Alnus*, *Betula*, *Populus*, *Quercus*, and *Ceanothus*, rarely on a coniferous substratum. Canada to Massachusetts and westward to Washington. July to March. Occasional.

P. Peckii is placed in the species group with *P. glebulosa* on account of the large, even-walled cystidia which are more flexuous than those of the latter species and with more the aspect of gloeocystidia, but I have not yet demonstrated by granular contents that they are gloeocystidia. *P. Peckii* is distinguished by the great number of subglobose spores distributed throughout the whole fructification in sections studied.

Specimens examined:

Canada: *J. Macoun, 18, 51;* Lower St. Lawrence Valley, *J. Macoun, 5.*

Massachusetts: Cherry Brook, *E. A. Burt & A. B. Seymour;* Magnolia, *W. G. Farlow* (in Burt Herb. and Mo. Bot. Gard. Herb., 44066); Sharon, *A. P. D. Piguet*, comm. by W. G. Farlow, 11 (in Mo. Bot. Gard. Herb., 55590) and by Farlow Herb., 132 (in Mo. Bot. Gard. Herb., 59622); Wellesley, *L. W. Riddle, 11.*

New York: Ithaca, *G. F. Atkinson, 5089;* Karner, *H. D. House*, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 54361, 55204); Westport, *C. H. Peck, 6*, type; White Plains, *W. H. Ballou, 1* (in Mo. Bot. Gard. Herb., 55030).

Michigan: Marquette, *C. J. Humphrey, 1870* (in Mo. Bot. Gard. Herb., 11089).
Wisconsin: Blue Mounds, *E. T. & S. A. Harper, 895.*
Washington: Bingen, *W. N. Suksdorf, 741, 907.*

69. P. heterocystidia Burt, n. sp.

Type: in Burt Herb.

Fructifications broadly effused, separable from the substratum when moistened, becoming cracked in drying and often loosening from substratum along the fissures, whitish when young, becoming light drab, cinnamon drab or vinaceous drab, the margin often paler; in section not colored or with only the hymenial layer clay-colored or brownish, 200–400 μ thick, 2-layered, the layer next to substratum usually broad, composed of loosely interwoven, somewhat ascending or longitudinally arranged, hyaline, nodose-septate hyphae 3–4½ μ in diameter, the hymenial layer 40–80 μ thick, composed of cystidia, gloeocystidia, and erect hyphae usually slightly colored near plane of origin from the under layer; cystidia consisting of both usual incrusted cystidia 25–35 × 6–8 μ, distributed in all parts of the outer layer, and of very large cystidia up to 40–100 × 20–50 μ which start from the base—often somewhat colored—of the hymenial layer; gloeocystidia slender, flexuous, 40–60 × 5–6 μ, between the basidia; basidia with 4 sterigmata; spores from spore collection white, even, cylindric, 12–15 × 3½–4½ μ.

Fructifications 2–7 cm. in diameter.

On fallen limbs of gray birch, beech, maple, *Carpinus*, *Magnolia*, and other frondose species. Canada to Mississippi and westward to Missouri and in Mexico. June to March. Common.

P. heterocystidia resembles *Corticium laeve* Pers.(=*C. evolvens* Fr.) in color but is a true *Peniophora*, readily distinguished from our other separable species by having incrusted cystidia of the usual size, other very large cystidia up to 20–50 μ in diameter, and gloeocystidia. Bresadola and von Höhnel & Litschauer confused this species with *P. carnea*, from which it differs in being much thicker, separable from the substratum when moistened, and being colored within on the hymenial side instead of next

to the substratum. Rarely a fructification may have the hymenium vary somewhat hydnaceous.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 716, under the name *Corticium glabrum*, 717a of some copies, under the name *Corticium subgiganteum*.

Canada: *J. Macoun, 3, 10, 14, 46.*

Ontario: Lake Rosseau, *E. T. & S. A. Harper, 755;* Ottawa, *J. Macoun, 110.*

Vermont: Middlebury, *E. A. Burt,* type, and 2 other gatherings.

Connecticut: Central Village, *J. L. Sheldon, 23,* comm. by N. Y. Bot. Gard. Herb.

New York: Bemis Heights, *C. H. Peck* (in N. Y. State Mus. Herb., under the name *Stereum albobadium*); Bronx Park, *Class in Mycology* (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 61392, 61430, and Burt Herb.); Kirkland, *H. D. House* (in N. Y. State Mus. Herb., Mo. Bot. Gard. Herb., 59685, and Burt Herb.); Snyders, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 56018); Syracuse, *L. M. Underwood,* in some copies of Ell. & Ev., Fungi Col., 221, under the name *Corticium glabrum;* White Plains, *W. H. Ballou* (in Mo. Bot. Gard. Herb., 55034).

New Jersey: Newfield, *J. B. Ellis.*

Pennsylvania: Meadville, *E. C. Smith,* comm. by L. O. Overholts, 8337 (in Mo. Bot. Gard. Herb., 59475); West Chester, *Everhart, Haines, Jefferis & Gray,* in Ellis, N. Am. Fungi, 716.

District of Columbia: Washington, *C. L. Shear, 1257a, 1260.*

Mississippi: Ocean Springs, *L. M. Underwood* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61484).

Ohio: Cincinnati, *C. G. Lloyd, 191, 2790, 4518;* Norwood, *C. G. Lloyd, 2274.*

Indiana: Millers, *E. T. & S. A. Harper, 962;* Union County, *M. F. & L. O. Overholts & B. Fink,* comm. by L. O. Overholts, 4204 (in Mo. Bot. Gard. Herb., 55636).

Illinois: Cypress, *C. J. Humphrey, 1347* (in Mo. Bot. Gard. Herb., 42923); Glencoe, *E. T. & S. A. Harper, 662, 646.*

Kentucky: Crittenden, *C. G. Lloyd* (in Lloyd Herb., 1411, and Mo. Bot. Gard. Herb., 55626).

Missouri: Columbia, *B. M. Duggar, 265, 288, 400, 472;* Pacific, *B. M. Duggar* (in Mo. Bot. Gard. Herb., 63417); near St. Louis, *E. A. Burt* (in Mo. Bot. Gard. Herb., 63418).

Mexico: Tepeite Valley near Guernavaca, *W. A. & E. L. Murrill, 400,* comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54551).

70. P. borealis (Peck) Burt, n. sp.

Peniophora disciformis (DC) Cooke var. *borealis* Peck in Harriman Alaska Exped. 5. The Fungi of Alaska, 43. 1904; Sacc. Syll. Fung. **17**: 175. 1905.

Type: in Mo. Bot. Gard. Herb.

Fructifications effused, thick, membranaceous, separable, becoming light buff in the herbarium, velvety with the numerous cystidia, the margin thinner, entire, clay-color, free in some places; in structure 60 μ thick, not colored, composed of hyaline hyphae 2 μ in diameter, not incrusted, densely and longitudinally arranged along the substratum and then curving obliquely outward to form the hymenial layer, and of occasional slender gloeocystidial organs with enlarged clavate or pyriform tips up to 4½–7 μ in diameter; cystidia incrusted, cylindric, 60–75 × 6–9 μ, confined to the hymenial surface but in great numbers there, protruding nearly their whole length beyond the basidia; a single detached spore is hyaline, even, 10 × 8 μ, but may be foreign.

Fructifications 5 mm.–2½ cm. long, 5 mm.–10 mm. wide.

On bark of small decaying twigs of a frondose species—perhaps *Alnus*. Alaska. June.

P. borealis has aspect somewhat suggestive of *P. aurantiaca* but is more buff-colored, with darker margin becoming free, and with cystidia so long and numerous as to be very conspicuous when viewed with a lens. The abundance of these cystidia is so great as to be a very important character in the recognition of this species by preliminary inspection.

Specimens examined:

Alaska: Aqua Dulce River, Yakutat Bay, *W. Trelease, 583,* type (in Mo. Bot. Gard. Herb., 5006).

71. P. lepida Bresadola, Mycologia **17**: 70. 1925.

Type: in Weir Herb.

Fructifications broadly effused, thick, waxy-membranaceous, separable from the substratum, somewhat horn-like and requiring moistening for a short time before sectioning, pinkish buff to light ochraceous-buff in the herbarium, somewhat pulverulent, the margin finally free and rolling up from the substratum; in section 500–600 μ thick, not colored, composed of densely arranged hyphae 3–3½ μ in diameter, which run longitudinally along the substratum and then curve obliquely into the hymenium; between the hyphae occur numerous slightly more deeply staining elongated organs of the nature of conducting organs or slender gloeocystidia; cystidia incrusted, cylindric, 6–8 μ in diameter, protruding up to 30 μ beyond the basidia, very numerous in the hymenial surface, the incrusted part about 20–45 μ long; no spores found.

Fructification 9 cm. long, 3½ cm. wide.

On a dead stub about 2½ cm. in diameter, of *Salix* sp. Idaho. June.

P. lepida has some resemblance to *P. gigantea* but is not quite as gelatinous in consistency as *P. gigantea* and occurs on *Salix*. The slender conducting hyphae or gloeocystidia should aid in recognizing the species. The broad layer of hyphae arranged longitudinally along the substratum and then curving outward into the hymenium is very like that of a resupinate *Stereum* but I recall no pileate *Stereum* of similar structure.

Specimens examined:

Idaho: National Forest, 50 miles east of Orofino, *A. S. Rhoads* (in Weir Herb., 16744, type).

72. P. Kauffmanii Burt, n. sp.

Type: in Mo. Bot. Gard. Herb., and probably in Kauffman Herb.

Fructifications long-effused, rather thin, adnate, small portions separable when moistened, between pale pinkish buff and tilleul-buff, not cracked, not waxy nor shining, the margin determinate, thinning out; in section 300–350 μ thick, 2-layered, with both layers of about equal thickness and the hymenial layer somewhat honey-yellow, the layer next to the substratum not colored, composed of loosely and longitudinally interwoven, thin-walled,

hyaline hyphae about 3 μ in diameter, of irregular outline; hymenial layer composed of densely arranged, erect hyphae, gloeocystidia, and cystidia; gloeocystidia flexuous, 45–100 × 4–7 μ; cystidia incrusted when wholly immersed, cylindric, obtuse, 30–45 × 6–8 μ, protruding 20–30 μ beyond the basidia in incrusted, or more usually, non-incrusted form, not abundant; spores hyaline, even, curved, 8–12 × 2½–3 μ, with pointed and tapering base, copious.

Fructifications 2–10 cm. long but broken off at one end, 1–2½ cm. wide.

On decaying limbs of *Fagus*. Kentucky. September. Probably local.

Among our few species of *Peniophora* which have gloeocystidia, *P. Kauffmanii* should be readily recognized by its occurrence on beech, buff color, structure of 2 equal layers, and small, incrusted cystidia.

Specimens examined:

Kentucky: Harlan, *C. H. Kauffman, 69*, type (in Mo. Bot. Gard. Herb., 22827).

73. P. alba Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, very thin, somewhat membranaceous, small pieces separable when moistened, white, even, not shining, somewhat cracked by contraction in drying, the margin thinning out; in section 80–100 μ thick, not colored, with the hyphae loosely arranged near the substratum, suberect, branching, about 3 μ in diameter, not incrusted, only rarely nodose-septate; gloeocystidia curved, 30–45 × 3½–4½ μ, usually starting from the substratum; cystidia not incrusted or with some incrusting granules, thin-walled, 4–5 μ in diameter, protruding up to 30 μ beyond the basidia; spores hyaline, even, 4–5 × 2½ μ.

Fructifications fragmentary and not showing ends nor more than one side; such fragments 5 cm. long, 10–15 mm. wide.

On bark of dead cedar or spruce. Canada. September.

P. alba seems possible of recognition among our many whitish species of *Peniophora* by its pure white color, presence of gloeocystidia in addition to cystidia, and occurrence on coniferous bark.

Specimens examined:
Canada: locality not given, *J. Macoun, 57*, type.

74. P. tenella Burt, n. sp.

Type: in Mo. Bot. Gard. Herb. and Farlow Herb.

Fructifications effused, white, tender, thin, loosely attached, separable when moistened, velvety, setulose with the large cystidia, the margin indeterminate, thinning out; in section 150–200 μ thick, not colored, composed of a dense hymenial layer 75–90 μ thick, borne on a loosely interwoven layer composed of thin-walled, hyaline hyphae 3–4 μ in diameter, nodose-septate, sometimes granule-incrusted; hymenial layer composed of basidia, gloeocystidia, and incrusted cystidia; gloeocystidia numerous, flexuous, tapering from the base, 45–75 × 5–8 μ; cystidia very large, heavily incrusted, conical, 60–100 × 15–20 μ, wholly immersed, or protruding beyond the basidia up to 75 μ; spores copious, hyaline, even, 7½–9 × 3–4 μ.

Fructifications 1–2 cm. in diameter.

On coniferous bark. New Hampshire and Massachusetts. September and October. Rare.

P. tenella is distinguished from *P. pubera* by occurrence on coniferous, rather than frondose, substratum, by being so loosely attached to the substratum that small portions needed for sectioning may be separated from the substratum when moistened, and by the loosely interwoven hyphal layer equalling or exceeding in thickness the hymenial layer and containing no gloeocystidia nor cystidia.

Specimens examined:
New Hampshire: Chocorua, *W. G. Farlow*, type (in Mo. Bot. Gard. Herb., 7617).
Massachusetts: Cambridge, *A. P. D. Piguet*, comm. by W. G. Farlow, 30.

75. P. duplex Burt, n. sp.

Type: in Burt Herb.

Fructifications small, effused, thin, adnate, somewhat membranaceous, small pieces separable when moistened, becoming pale pinkish buff in the herbarium, even, not cracked, not shining, the

margin narrow, radiate-fibrillose; in section 100–200 μ thick, not colored, the hyphae with walls gelatinously modified, indistinct, about 3 μ in diameter, ascending, densely crowded together and interwoven and with numerous gloeocystidia present; gloeocystidia sometimes pyriform but usually more elongated, 20–45 × 6–9 μ, in all regions of the fructification; cystidia incrusted, cylindric, 25–30 × 4½–5 μ, protruding up to 20 μ beyond the basidia, confined to the hymenium; spores hyaline, even, flattened on one side, 5 × 2½ μ.

Fructifications received in fragments 1–2 cm. long, 5–10 mm. wide.

On bark of *Pinus austriaca* (cult.). New York. October.

In general aspect *P. duplex* suggests small fructifications of *P. gigantea* but not curling away from the substratum at all. The cystidia are smaller than those of *P. gigantea* and the latter does not have gloeocystidia.

Specimens examined:

New York: Shelter Island, *W. G. Farlow*, type.

76. P. mutata (Peck) Bresadola in Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 399. 1913.

Corticium mutatum Peck, N. Y. State Mus. Rept. **43**: 67. 1890.

Type: in N. Y. State Mus. Herb.

Fructifications broadly effused, membranaceous, fleshy, thick, separable when moistened, drying white to pinkish buff, sometimes centrally tuberculose or with raduloid teeth and occasionally with radial folds, sometimes cracking in drying and showing the white, fibrillose subiculum in the fissures, the margin white, radially byssoid; in structure 300–1000 μ thick, composed of loosely arranged, ascending, thin-walled, hyaline hyphae 3–4 μ in diameter, occasionally nodose-septate; gloeocystidia pyriform, 15 × 7 μ, more or less numerous, sometimes grown out into elongated, flexuous form up to 100 × 4–5 μ, occurring as hyphal ends or branches in the sybhymenium; cystidia incrusted or not incrusted, 50–100 × 6–15 μ, sometimes not protruding beyond the basidia and sometimes so few present as to be found only after examination of several sections; basidia 4-spored, with short, thick, knob-like sterigmata; spores hyaline, even, cylindric, 8–16 × 3–4 μ.

Fructifications 3–7 cm. long, 1–3 cm. broad, sometimes larger by confluence.

Common on bark of decaying logs and fallen branches of *Populus* and also on *Tilia*, *Quercus*, *Acer*, and other frondose species. Canada to Alabama, westward to Idaho, in Europe and in Japan. July to November and in April.

P. mutata is a thick, somewhat fleshy, white, or whitish species occurring usually on bark of fallen poplar and basswood and showing in sectional preparations pyriform gloeocystidia, cystidia, and spores usually about 12 × 3½ μ. This species approaches the genus *Radulum* in thickness of the fructification, its obliquely ascending hyphae, and in occasional specimens having some raduloid teeth; such specimens have the aspect of *Radulum orbiculare* but differ from it by presence of the pyriform bodies and cystidia.

Specimens examined:

Exsiccati: Ellis, N. Am. Fungi, 717 a, under the name *Corticium subgiganteum*, 719, under the name *Corticium laeve;* Ell. & Ev., Fungi Col., 308, under the name *Corticium laeve.*

Austria: Langenschönbich, *F. v. H¨hnel*, comm. by V. Litschauer.

Canada: *J. Macoun, 7, 52;* Lower St. Lawrence Valley, *J. Macoun, 11, 81;* Ottawa, *J. Macoun, 40, 41*, and *136* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55924); Ontario, Harraby, *E. T. & S. A. Harper, 685.*

Maine: Piscataquis County, *W. A. Murrill, 2451* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61402); Portage, *L. W. Riddle, 16.*

Vermont: Middlebury, *E. A. Burt*, two gatherings.

New York: Ithaca, *G. F. Atkinson, 22965;* Karner, *H. D. House, 14.153, 14.160* (in part), and two unnumbered specimens (in Mo. Bot. Gard. Herb., 44712, 44706, 54367, 55215); Sevey, *C. H. Peck*, type (in N. Y. State Mus. Herb.); Shokan, *C. H. Peck, T24* (in Mo. Bot. Gard Herb., 54660); Slingerlands, *C. H. Peck, T 23* (in Mo. Bot. Gard. Herb., 54659); Syracuse, *L. M. Underwood, 48* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61409, 61433); White Plains, *W. H. Ballou* (in Mo. Bot. Gard. Herb., 10458).

New Jersey: Newfield, *J. B. Ellis*, in Ellis, N. Am. Fungi, 717a, 719, and Ell. & Ev., Fungi Col., 308.

Florida: *W. W. Calkins.*
Alabama: Montgomery, *R. P. Burke, 13* (in Mo. Bot. Gard. Herb., 17193).
Ohio: Preston, *C. G. Lloyd, 1555;* West Elkton, *L. O. Overholts, 3164* (in Mo. Bot. Gard. Herb., 5712).
Indiana: Crawfordsville, *D. Reddick, 6, 8, 13, 14.*
Illinois: River Forest, *E. T. & S. A. Harper, 631.*
Michigan: Ann Arbor, *C. H. Kauffman.*
Wisconsin: Blue Mounds, *E. T. & S. A. Harper, 871.*
Minnesota: Princeton, *C. J. Humphrey, 899* (in Mo. Bot. Gard. Herb., 21044).
Missouri: Columbia, *B. M. Duggar, 561;* Meramec Highlands, *P. Spaulding* (in Mo. Bot. Gard. Herb., 63746); Pickering, *E. Bartholomew, 6425* (in Mo. Bot. Gard. Herb., 55195); St. Louis, *N. M. Glatfelter, 1377*, comm. by N. Y. Bot. Gard. Herb.; *E. A. Burt* (in Mo. Bot. Gard. Herb., 44073).
South Dakota: Custer, *J. R. Weir, 10019* (in Mo. Bot. Gard. Herb., 55799).
Idaho: Priest River, *J. R. Weir, 37;* St. Maries, *J. R. Weir, 560* (in Mo. Bot. Gard. Herb., 63179).
Japan: Bungo, *A. Yasuda, 107* (in Mo. Bot. Gard. Herb., 57024).

77. P. Allescheri Bresadola, Fungi Trid. **2:** 62. *pl. 172.* 1898; Sacc. Syll. Fung. **16:** 194. 1902.—But not as understood by Bourdot & Galzin and by Wakefield.

Kneiffia Allescheri Bresadola, Ann. Myc. **1:** 100. 1903.—*Gloeopeniophora Allescheri* (Bres.) v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **117:** 1082. 1908.

Type: in Bresadola Herb. and Burt Herb.

Fructifications broadly effused, membranaceous, fleshy, thick, drying white to pinkish buff, sometimes contracting in drying, curling away from the substratum more or less at the fissures and showing the white, fibrillose subiculum, the margin white, byssoid; in structure 300–1000 μ thick, composed of obliquely ascending and interwoven, hyaline hyphae more or less incrusted, 3–6 μ in diameter; gloeocystidia elongated, flexuous, 40–100 × 4–7 μ, often continued beyond the deeply staining portion as an

undifferentiated hypha, numerous in the subhymenium; cystidia incrusted or not incrusted, 30–60 × 6–10 μ; spores hyaline, even, 10–13 × 3–4 μ.

Fructifications 2–10 cm. long, 1–3 cm. broad.

On bark of fallen limbs of *Populus* and other frondose species. Canada to New York and westward to Washington, in West Indies, and in Europe.

The type of *P. Allescheri* and specimens of similar structure cited below differ so slightly from *P. mutata* that I have separated them from the latter only by all their gloeocystidia being of slender elongated form and perhaps specially differentiated middle portions of hyphae, while the gloeocystidia of *P. mutata* are terminal portions of hyphae and hyphal branches which are in many cases pyriform and in others afford indication by a pyriform base of having finally grown out from a pyriform body into an elongated gloeocystidium. It may be that when someone can keep under observation and examination a specimen of *P. mutata* during its season, he may find that pyriform gloeocystidia are present abundantly up to the time of copious spore production and then finally all become elongated so that the fructification would be referable to *P. Allescheri*. In this event *P. Allescheri* will become a synonym of *P. mutata* by priority of the latter.

While *P. mutata* has become correctly understood in Europe through my exchanges with Bresadola there is a misunderstanding there concerning *P. Allescheri*. Von Höhnel & Litschauer studied the original specimen of *P. Allescheri* in Bresadola Herb. and state, *loc. cit.*, that this consists of a mixture of fructifications of *P. cremea* and *P. Allescheri*, the latter as described by Bresadola and figured in his plate. The specimen shared with me by Bresadola is in such close agreement with the plate that the colored drawing of the upper figure may have been made from it, and it agrees also with the description. Its data as to collection is given "ad corticem Fagi silv. Bavaria. *Allescher*." The portions of the original specimens communicated to Bourdot & Galzin and to Miss Wakefield are apparently of the *P. cremea* component, referred to by v. Höhnel & Litschauer.

Specimens examined:

Sweden: *L. Romell, 439* (in Mo. Bot. Gard. Herb., 44305); Stockholm, *L. Romell, 102*.
Germany: Bavaria, *Allescher*, comm. by Bresadola, part of type.
Canada: Rideau Park, *J. Macoun, 325;* Ottawa, *J. Macoun, 133*, in part; Quebec, Ironsides, *J. Macoun, 256*.
New Hampshire: Jackson, *W. H. Snell, 624* (in Mo. Bot. Gard. Herb., 59246).
Vermont: Middlebury, *E. A. Burt.*
New York: Glasco, Ulster County, *P. Wilson, 40* (in Mo. Bot. Gard. Herb., 54747); Ithaca, *H. E. Stork, 6* (in Mo. Bot. Gard. Herb., 56643), *G. F. Atkinson, 8031, 22761, D. Reddick*, by Cornell Univ. Herb., 20567, *Van Hook*, Cornell Univ. Herb., 8011, and *Wright*, Cornell Univ. Herb., 8353.
Ohio: *C. G. Lloyd, 3920;* College Hill, *C. G. Lloyd, 3121* (in Lloyd Herb., Burt Herb., N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61419).
Indiana: Crawfordsville, *A. R. Bechtel, 10* (in Mo. Bot. Gard. Herb., 59648).
Michigan: Ann Arbor, *C. H. Kauffman, 12;* New Richmond, *C. H. Kauffman, 31* (in Mo. Bot. Gard. Herb., 9864).
British Columbia: Vancouver Island, *J. Macoun, 355* (in Mo. Bot. Gard. Herb., 55323).
Washington: Bingen, *W. N. Suksdorf, 702*.
West Indies: Grenada, Grand Etang, *R. Thaxter*, comm. by W. G. Farlow, 4.

78. P. subcremea v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **115**: 1600. *text f. 6.* 1906; Sacc. Syll. Fung. **21**: 408. 1912.

Type: type distribution in Rabenhorst, Fungi Eur., 3230, under the name *Corticium lacteum*.

Fructifications effused, thin, closely adnate, becoming cartridge-buff to ivory-yellow in the herbarium, not cracked, the margin thinning out; in section 40–150 μ thick, not colored, composed of suberect, bushy-branched hyphae 2–3 μ in diameter, not incrusted, only occasionally nodose-septate, and of flexuous gloeocystidia 40 × 4 μ, starting from the substratum in the type; cystidia not incrusted, 4½–6 μ in diameter, protruding up to

40 μ beyond the basidia; spores hyaline, cylindric, 3½–4½ × 2–2½ μ, copious.

Fructifications 1½–8 cm. long, 1½–5 cm. wide.

On bark and wood of *Pinus*. Finland, Montana, and Manitoba. September to November. Rare.

The specimen from Manitoba is on bark of a frondose species, but agrees well in other respects with the specimens on pine. The small spores are a distinguishing character of *P. subcremea*.

Specimens examined:

Exsiccati: Rabenhorst, Fungi Eur., 3230, type distribution, under the name *Corticium lacteum*.

Finland: Mustiala, *P. A. Karsten*, in Rabenhorst, Fungi Eur., 3230.

Montana: Anaconda, *E. E. Hubert*, comm. by J. R. Weir, 12010 (in Mo. Bot. Gard. Herb., 63370).

Manitoba: Winnipeg, *G. R. Bisby & I. L. Conners, 1183* (in Mo. Bot. Gard. Herb., 59047).

79. P. admirabilis Burt, n. sp.

Type: in Burt Herb.

Fructifications broadly effused, adnate, thin, membranaceous, small pieces separable, becoming cartridge-buff in the herbarium, fibrillose, not shining, even, with but few small cracks, the margin thinning out, with its hyphae loosely interwoven; in section 180–240 μ thick, not colored, composed of suberect, thin-walled hyphae 3½–4 μ in diameter, not incrusted, of gloeocystidia both elongated and vesicular, and of large chlamydospores; cystidia cylindric, incrusted, up to 105 × 9 μ, confined to the hymenium, somewhat disorganized by potassium hydrate solution; vesicular gloeocystidia and vesicular spaces up to 45 × 30 μ; chlamydospores as seen singly on hyphal branches are up to 15 × 9 μ; basidiospores white in spore collection, even, 6–7 × 3 μ, borne 4 to a basidium.

Fructifications 3–10 cm. long, 1–2 cm. wide.

On decaying wood of stump of *Ulmus*. New York. May.

P. admirabilis is well marked among our species which have gloeocystidia by the presence of large imbedded spores.

Specimens examined:
New York: Oneonta, *E. A. Burt.*

80. P. versata Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, thin, membranaceous, small pieces separable when moistened, becoming pinkish buff in the herbarium, not waxy, the margin thinning out, fibrillose; in section 150–300 μ thick, not colored, composed of suberect, interwoven hyphae about 3 μ in diameter, with walls somewhat gelatinously modified, and of gloeocystidia; gloeocystidia numerous, flexuous, 35–55 × 6–8 μ; cystidia not incrusted, tapering towards the apex, 6 μ in diameter, protruding up to 40 μ, scarcely or perhaps not at all distinguishable from gloeocystidia; basidia with 4 sterigmata; spores hyaline, even, 4–5 × 2½–3 μ.

Fructifications 2–5 mm. long, 5–15 mm. wide.

On slightly decayed red fir planks and cross-ties. Washington. September and October.

The fructifications of *P. versata* stand out conspicuously against the blackened timber upon which they occur. The resemblance of the protruding cystidia to gloeocystidia and the possibility that they have the function of gloeocystidia or may be gloeocystidia functioning as cystidia should enable this species to be readily distinguished from species containing cystidia and gloeocystidia quite distinct from each other.

Specimens examined:
Washington: Chehalis, *C. J. Humphrey, 6285;* Edmonds, *C. J. Humphrey, 7623,* type.

81. P. albo-straminea Bresadola, Mycologia **17:** 69. 1925.

Type: in Weir Herb.

Fructifications orbicular, finally confluent and broadly effused, thin, very tender, small pieces separable when moistened, becoming between cartridge-buff and ivory-yellow in the herbarium, somewhat cracked, even, the margin pruinate; in section 60–90 μ thick, not colored, composed of somewhat loosely arranged hyphae 3–5 μ in diameter, occasionally nodose-septate, and of gloeocystidia; gloeocystidia flexuous to zigzag, 40–60 × 4½–6 μ,

usually starting from the substratum and wholly immersed, sometimes protruding beyond the basidia; cystidia, if really distinct from gloeocystidia, not incrusted, 4½–8 μ in diameter, protruding up to 30 μ beyond the basidia; spores hyaline, even, 5–7½ × 3–4 μ.

Fructifications 2–8 cm. long, 1½–3 cm. wide.

On wood and bark of decaying *Alnus tenuifolia* and *Quercus californica*. Idaho and California. October.

The gloeocystidia, sometimes of zigzag form, and cystidia, which are possibly only protruding portions of gloeocystidia, are marked characters of the type specimen which should afford recognition of *P. albo-straminea* if these are constant specific characters. However, the buff color, *Alnus* substratum, and presence of gloeocystidia should suffice. In No. 17069 a foreign mycelium of coarse hyphae is underneath the fructification proper.

Specimens examined:

Idaho: Priest River, *J. R. Weir, 17069*, type, and *16818* (both in Weir Herb.).

California: Massack, Plumas National Forest, *A. S. Rhoads, 17* (in Mo. Bot. Gard. Herb., 56986).

82. P. Taxodii Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, very thin, closely adnate, whitish to pale olive-buff in the herbarium, the hymenium loose and rather hypochnoid under a lens, the margin indeterminate, thinning out; in section 45–60 μ thick, not colored, composed of erect, branching hyphae 2–2½ μ in diameter, not incrusted, not nodose-septate, and of numerous cystidia, gloeocystidia, and crystalline matter; cystidia not incrusted, thin-walled, tapering to a sharp apex, 6–8 μ in diameter, protruding 20–40 μ beyond the basidia, often starting from the substratum; gloeocystidia often not distinguishable from the cystidia except by granular, deeply staining contents, protruding up to 20–40 μ beyond the basidia; spores hyaline, even, 7–7½ × 3–3½ μ.

Fructification 7 cm. long, 1½–2 cm. wide.

On decorticated top limb of prostrate top of *Taxodium dis-*

tichum left in the swampy woods. Texas. September. Probably local.

P. Taxodii has thin grayish fructifications on the blackened, weathered wood of a prostrate tree top left in lumbering operations. It is difficult to distinguish cystidia from gloeocystidia in the sections unless the organs lacking contents which take the stain are cystidia and the deep-staining and more numerous bodies gloeocystidia, for both start from the substratum, protrude beyond the hymenium, and taper to a sharp point.

Specimens examined:

Texas: Beaumont, *C. J. Humphrey, 5947*, type.

83. P. investiens Burt, n. sp.

Type: in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., and Burt Herb.

Fructifications longitudinally effused, thin, adnate, small pieces separable when moistened, becoming cartridge-buff in the herbarium, even, not cracked, not shining, the margin thinning out, minutely tomentose; in section 180 μ thick, not colored, with a broad layer of densely interwoven hyphae 2½–3 μ in diameter, thin-walled, not incrusted, not nodose-septate; gloeocystidia flexuous, 25–40 × 4–5 μ, immersed in the hymenium; cystidia not incrusted, 9 μ in diameter, protruding up to 60 μ beyond the basidia; basidia with 4 prominent sterigmata; spores hyaline, even, 12–13 × 3–3½ μ—one spore seen is 15 × 6 μ but perhaps does not belong.

Fructifications 8 cm. long, 1 cm. wide.

On decaying stem of palmetto. Bermuda. December.

The presence of the gloeocystidia in the hymenial layer and not also in the interwoven hyphae near the trama, together with the long spores and occurrence on palmetto, should enable the recognition of *P. investiens*.

Specimens examined:

Bermuda: *Stewardson Brown, N. L. Britton & F. J. Seaver, 1324*, type (in N. Y. Bot. Gard. Herb., Mo. Bot. Gard. Herb., 63730, and Burt Herb.).

84. P. incarnata (Pers.) Karsten, Hedwigia **1889**: 27. F. 1889; Finska Vet.-Soc. Bidrag Natur och Folk **48**: 424. 1889;

Massee, Linn. Soc. Bot. Jour. **25**: 147. Jl. 1889; Sacc. Syll. Fung. **9**: 241. 1891; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 404. 1913; Rea, Brit. Basid. 694. 1922.

Thelephora incarnata Persoon, Syn. Fung. 573. 1801; Myc. Eur. **1**: 130. 1822 (Corticium); Fries, Syst. Myc. **1**: 444. 1821; Elenchus Fung. **1**: 219. 1828.—*Corticium incarnatum* (Pers.) Fries, Epicr. 564. 1838; Hym. Eur. 654. 1874; Berkeley, Brit. Fung. 275. 1860; Berk. & Curtis, Grevillea **2**: 4. 1873; Peck, N. Y. State Mus. Rept. **24**: 80. 1872; Morgan, Cincinnati Soc. Nat. Hist. Jour. **10**: 201. 1888; Sacc. Syll. Fung. **6**: 625. 1888.—*Kneiffia incarnata* (Pers.) Bresadola, Ann. Myc. **1**: 103. 1903.—*Gloeopeniophora incarnata* (Pers.) v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **116**: 816. 1907.—*Peniophora aemulans* Karsten, Finska Vet-Soc. Bidrag Natur och Folk **48**: 425. 1889; Sacc. Syll. Fung. **9**: 239. 1891.

Fructifications effused, closely adnate, drying pinkish cinnamon to warm buff, cracking, the margin sometimes paler, thinning out; in section 100–250 μ thick, not colored, composed of hyaline, thin-walled hyphae 2–3 μ in diameter, densely interwoven along the substratum and then becoming suberect and extending between more or less numerous gloeocystidia and some cystidia; gloeocystidia sometimes broadly ovoid, 30–45 × 10–15 μ, usually more cylindric and narrower, 30–60 × 6–10 μ; cystidia becoming incrusted, 30–45 × 6–10 μ, rarely protruding beyond the basidia; basidia with 4 sterigmata; spores hyaline, even, cylindric, flattened on one side, 6–10 × 3–4½ μ.

Fructifications 2–10 cm. long, 1–2 cm. broad, sometimes in scattered, small, tubercular growths 2–5 mm. in diameter on lenticels of small limbs.

On wood and bark of fallen limbs of frondose species usually. Europe, Canada to Alabama, and westward to the Pacific states, and in Japan. Throughout the year. Common.

P. incarnata is recognizable by its closely adnate, reddish fructifications, spores 6–9 × 3–4 μ, and abundant gloeocystidia. Sometimes one has to search several sections before finding an incrusted cystidium. The spores run slightly smaller in most American gatherings than in the fewer European specimens which I have seen and are with us usually only about 6–8 × 3 μ.

Specimens examined:

Exsiccati: Cooke, Fungi Brit., 7; Reliq. Farlowianae, 342; Ravenel, Fungi Am., 140; Romell, Fungi Scand., 33.

Sweden: Stockholm, *L. Romell, 67, 100, 101,* and in Romell, Fungi Scand., 33.

Finland: Mustiala, *P. A. Karsten,* authentic specimen of *P. aemulans.*

Austria: Tirol, *V. Litschauer,* four specimens.

Italy: locality not given, *G. Bresadola,* two specimens.

England: Knys Lynn, *C. B. Plowright,* in Cooke, Fungi Brit., 7; Yorkshire, *E. M. Wakefield* (in Mo. Bot. Gard. Herb., 57124).

Newfoundland: Bay of Islands, *A. C. Waghorne, 5, 165* (in Mo. Bot. Gard. Herb., 43987, 5010).

Ontario: Harraby, Lake Rosseau, *E. T. & S. A. Harper, 791.*

Maine: Piscataquis County, *W. A. Murrill, 1861* (in N. Y. Bot. Gard. Herb., Burt Herb., and Mo. Bot. Gard. Herb., 61591); Orono, *P. L. Ricker, 621.*

New Hampshire: Chocorua, *W. G. Farlow, c39* (in Mo. Bot. Gard. Herb., 43974), and in Reliq. Farlowianae, 342.

Vermont: Middlebury, *E. A. Burt,* six gatherings; Ripton, *E. A. Burt,* two gatherings.

Massachusetts: *W. G. Farlow, 4;* Sharon, *A. P. D. Piguet, 5,* two unnumbered specimens, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 55220, 55446, 55600).

New York: Albany, *H. D. House,* six gatherings (in Mo. Bot. Gard. Herb., 57412, 57457, 57519, 59684, 59700, 63448); Alcove, *C. L. Shear, 246;* Fulton, *A. E. Fivaz,* comm. by A. H. W. Povah, 136 (in Mo. Bot. Gard. Herb., 58158); Ithaca, *G. F. Atkinson, 3034, C. J. Humphrey, C. O. Smith,* comm. by G. F. Atkinson, 8225, *Van Hook,* comm. by G. F. Atkinson, 8066, *H. H. Whetzel,* Plant Path. Herb., 12228 (in Mo. Bot. Gard. Herb., 60599); Orient, *R. Latham, 144* (in Mo. Bot. Gard. Herb., 44230); Orient Point, *R. Latham,* comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 55815, 55922); Syracuse, *L. M. Underwood, 2, 89* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61567, 61598); Vaughns, *S. H. Burnham, 14* (in Mo. Bot. Gard. Herb., 54500).

Pennsylvania: Center Hall, *E. West,* comm. by L. O. Overholts,

3661 (in Mo. Bot. Gard. Herb., 54702); State College, *L. O. Overholts, 4807* (in Mo. Bot. Gard. Herb., 56340); Trexlertown, *W. Herbst, 23*, and comm. by Lloyd Herb., 3611.

Maryland: Takoma Park, *C. L. Shear, 1337*.

District of Columbia: Washington, *C. L. Shear, 1257, 1267*.

West Virginia: Paw Paw, *C. L. Shear, 1174*.

South Carolina: Aiken, *H. W. Ravenel*, in Ravenel, Fungi Am., 140.

Florida: Royal Palm Hammock, *W. A. Murrill, 123, 136*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62098, 62099).

Alabama: Auburn, *F. S. Earle, 2299* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61416); Montgomery County, *R. P. Burke, 19, 275, 630, 664, 666, 679, 699* (in Mo. Bot. Gard. Herb., 16700, 57158, 63099, 63076, 63101, 63097, 63103).

Kentucky: *C. G. Lloyd, 1878*.

Ohio: College Hill, *Aiken*, comm. by C. G. Lloyd, 2327.

Wisconsin: Madison, *W. Trelease* (in Mo. Bot. Gard. Herb., 44314); Palmyra, *A. O. Stucki, 39*.

Iowa: Woodbine, *C. J. Humphrey & C. W. Edgerton*, comm. by C. J. Humphrey, 6566 (in Mo. Bot. Gard. Herb., 20691).

Missouri: Bismarck, *L. O. Overholts* (in Mo. Bot. Gard. Herb., 63454); Perryville, *L. O. Overholts, 2687* (in Mo. Bot. Gard. Herb., 44287).

Kansas: Phillips County, *E. Bartholomew;* Rooks County, *E. Bartholomew, 2046* (in Mo. Bot. Gard. Herb., 4842, 44313).

Colorado: Mancos, *G. G. Hedgcock*, comm. by C. J. Humphrey, 2551 (in Mo. Bot. Gard. Herb., 9783).

New Mexico: Tyom Experiment Station, *W. H. Long, 21564* (in Mo. Bot. Gard. Herb., 55142).

Alaska: Farragut Bay, *W. Trelease, 582* (in Mo. Bot. Gard. Herb., 4852).

Washington: Bingen, *W. N. Suksdorf, 715, 745, 760, 765, 881, 882, 904*.

Japan: Prov. Bungo, *A. Yasuda, 119, 123* (in Mo. Bot. Gard. Herb., 59470, 59474).

85. P. aurantiaca Bresadola in Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 402. 1913; Rea, Brit. Basid. 694. 1922.

Corticium aurantiacum Bresadola, Fungi Trid. **2**: 37. *pl. 144, f. 2.* 1892; Sacc. Syll. Fung. **11**: 126. 1895.—*Kneiffia aurantiaca* Bresadola, Ann. Myc. **1**: 103. 1903.—*Gloeopeniophora aurantiaca* (Bres.) v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **117**: 1094. 1908.

Type: probably in Bresadola Herb.; authentic specimen in Burt Herb.

Fructifications effused, beginning as small, convex outgrowths at lenticels of the bark, spreading so as to form circular patches which become confluent, adnate, bright orange-pink to orange-chrome, fading in the herbarium to light pinkish cinnamon and light buff, the margin white at first, radiating; in section not colored, 150–250 μ thick, with the hyphae densely and longitudinally arranged in a rather broad layer next to the substratum except at the points of emergence from the lenticels, hyaline, thin-walled, 3–4 μ in diameter; gloeocystidia 30–60 × 6–9 μ, abundant in the convex portions; cystidia rough-walled, pointed, up to 45 × 8 μ, sometimes protruding 30 μ beyond the basidia, more often wholly immersed and 30 × 4–5 μ; basidia large, 60 × 10–12 μ, often protruding beyond the immature basidia when fruiting and bearing 4 sterigmata; spores hyaline, even, 12–16 × 6–12 μ.

Fructifications 1–5 mm. in diameter at first, then laterally confluent over areas 1–10 cm. long, ½–2 cm. broad.

On dead *Alnus* of various species. Labrador to North Carolina, westward to northern United States and Canada to British Columbia and Oregon, and in Europe. August to November. Common.

P. aurantiaca is easily recognized by its occurrence on dead twigs of alder, in bright incarnate or orange-red fructifications with large spores up to 15 × 10 μ. These spores are usually borne copiously and show well in crushed preparations. To demonstrate the gloeocystidia and cystidia it is necessary to examine sections cut through the convex or papilliform points of origin of the fructifications. Sometimes examination of many sections is necessary for demonstration of the cystidia. Failure to cut the sections from places above stated led me to refer gatherings of this species to *Corticium laetum* for some of my cor-

respondents. *C. laetum* may occur on *Alnus* and has color and spores like *P. aurantiaca.*

Specimens examined:

Exsiccati: de Thümen, Myc. Univ., 112, under the name *Corticium incarnatum;* Linhart, Fungi Hung., 438, under the name *Peniophora incarnata.*

Sweden: *L. Romell, 62.*

Austria: Tirol, *V. Litschauer,* three specimens, *E. Rehm,* in Myc. Univ., 112.

Hungary: Petrozsény, *G. Linhart,* in Linhart, Fungi Hung., 438.

Italy: Trient Alps, *G. Bresadola,* authentic specimen.

England: Lyndhurst, Hamp., *E. M. Wakefield* (in Mo. Bot. Gard. Herb., 57127).

Labrador: The Strait, *A. C. Waghorne, 5* (in Mo. Bot. Gard. Herb., 43986).

Newfoundland: Bay of Islands, *A. C. Waghorne, 341* (in Mo. Bot. Gard. Herb., 5012).

New Brunswick: Campobello, *W. G. Farlow, 1.*

Canada: *J. Macoun, 17, 116;* Carleton's Place, *J. Macoun, 158;* Ottawa, *J. Macoun, 25.*

Maine: Costigan, *W. A. Murrill, 1766* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61407); Kittery Point, *R. Thaxter & E. A. Burt;* Portage, *L. W. Riddle, 13;* Westbrook, *P. L. Ricker, 977.*

New Hampshire: Chocorua, *W. G. Farlow, c6* (in Mo. Bot. Gard. Herb., 44124); Hanover, *G. R. Lyman, 24* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61587).

Massachusetts: Weston, *A. B. Seymour, T34* (in Mo. Bot. Gard. Herb., 15759).

New York: Childwold, *G. F. Atkinson & B. M. Duggar,* Cornell Univ. Bot. Dept. 5056; Hudson Falls, *S. H. Burnham, 28* (in Mo. Bot. Gard. Herb., 54491); Karner, *H. D. House, 14.164* and another specimen, comm. by N. Y. State Mus. Herb. (in Mo. Bot. Gard. Herb., 44713, 54372).

Pennsylvania: Bear Meadows, *L. O. Overholts, 2677* (in Mo. Bot. Gard. Herb., 20277).

North Carolina: Chapel Hill, *W. C. Coker, 4705* (in Mo. Bot. Gard. Herb., 57425).

Michigan: Gogebic County, *E. A. Bessey, 184* (in Mo. Bot. Gard. Herb., 56581); Vermilion, *A. H. W. Povah* (in Mo. Bot. Gard. Herb., 18274).

Montana: Evaro, *J. R. Weir, 410* (in Mo. Bot. Gard. Herb., 21617); Missoula, *J. R. Weir, 349, 425* (in Mo. Bot. Gard. Herb., 6105, 14765).

Idaho: Addie, *J. R. Weir, 12005* (in Mo. Bot. Gard. Herb., 63321).

Manitoba: Norway House, *G. R. Bisby, 1460* (in Mo. Bot. Gard. Herb., 61642).

British Columbia: *J. Macoun, 752*, comm. by J. Dearness (in Mo. Bot. Gard. Herb., 12027); Agassiz, *J. R. Weir, 359* (in Mo. Bot. Gard. Herb., 16760); Salmo, *J. R. Weir, 515* (in Mo. Bot. Gard. Herb., 14170); Sidney, *J. Macoun, 1, 72, 752* (in Mo. Bot. Gard. Herb., 5755, 55339, 55318).

Washington: Kalama, *C. J. Humphrey, 6134;* Olympia, *C. J. Humphrey, 6304;* Seattle, *W. A. Murrill, 141*, and an unnumbered specimen, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 55731, 55733).

Oregon: Corvallis, *S. M. Zeller, 1906* (in Mo. Bot. Gard. Herb., 56882).

86. P. pubera (Fr.) Sacc. Syll. Fung. **6**: 646. 1888; Massee, Linn. Soc. Bot. Jour. **25**: 149. 1889; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 400. 1913; Rea, Brit. Basid. 693. 1922.

Thelephora pubera Fries, Elenchus Fung. **1**: 215. 1828.—*Corticium puberum* Fries, Epicr. 562. 1838; Hym. Eur. 652. 1874; Patouillard, Tab. Anal. Fung. **1**: 66. *f. 152*. 1883; Bresadola, Fungi Trid. **2**: 38. *pl. 145. f. 1*. 1892.—*P. pubera* forma *villosa* Bresadola, I. R. Accad. Agiati Atti **3**: 113. 1897.—*Kneiffia pubera* (Fr.) var. *villosa* Bresadola, Ann. Myc. **1**: 101. 1903.

Fructifications effused, closely adnate, white, becoming dirty whitish to light buff and pinkish buff in the herbarium, and widely cracked, the hymenium even, setulose with the large cystidia, the margin indeterminate, thinning out; in section 45–400 μ thick, not colored, composed of rather crowded, erect hyphae 2–4 μ in diameter, thin-walled, not incrusted, and of gloeocystidia and incrusted cystidia; gloeocystidia flexuous, 30–60 × 4½–9 μ;

cystidia incrusted, conical, pointed, fusiform, 50–90 × 8–20 μ, wholly immersed or protruding up to 50 μ; spores hyaline, even, depressed on one side.

Fructifications 2–6 cm. long, 1–3 cm. wide.

On decaying wood, logs and limbs of frondose species, rarely on conifers. In Europe and from Canada to Louisiana and westward to British Columbia and Oregon. May to January. Common.

P. pubera is characterized by having gloeocystidia, large, conical, heavily incrusted cystidia, and spores usually 7–9 × 3½–4 μ. The gloeocystidia show well in my permanent mounts in glycerine, after the sections have been stained with eosin and stood for a few hours in glycerine. I did not find an authentic specimen of *P. pubera* in Kew or Fries Herbaria but specimens received under this name from Bresadola, Litschauer, Romell, and Miss Wakefield have gloeocystidia in every specimen and other characters as stated and show agreement in the European concept of this species. Specimens with the other characters of *P. pubera* but lacking gloeocystidia should be compared with *P. guttulifera*. In North America, *P. pubera* forms thinner fructifications than in Europe and is sometimes paler, drying rarely whitish or with a slight yellowish tint.

Specimens examined:

Sweden: Göteborg, *L. Romell, 174.*

Germany: Westphalia, Lengerich, *W. Brinkmann,* authentic specimen of *P. pubera* Fr. f. *villosa* from Bresadola.

Austria: Tirol, Innsbruck, *V. Litschauer,* two specimens; Stubai, *V. Litschauer.*

Italy: Trient, *G. Bresadola.*

Great Britain: S. Wales, Swansea, *E. M. Wakefield* (in Mo. Bot. Gard. Herb., 57123).

Canada: Quebec, Hull, *J. Macoun, 388.*

New Hampshire: Chocorua, *W. G. Farlow, 6, 6b, 27,* and *29* (in Burt Herb.), and an unnumbered specimen and *152* (in Mo. Bot. Gard. Herb., 7843, 55244).

Massachusetts: Magnolia, *W. G. Farlow,* two specimens.

Rhode Island: Woonsocket, *W. H. Snell, 7M, 8M* (in Mo. Bot. Gard. Herb., 56805, 56806).

New York: Ithaca, *G. F. Atkinson, 8227, 14363,* and *C. Thom,* comm. by G. F. Atkinson, 14372; Karner, *H. D. House, 14.165* in part (in Mo. Bot. Gard. Herb., 44715).
New Jersey: Newfield, *J. B. Ellis,* three specimens (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61401, 61443, 63467).
Maryland: Takoma Park, *C. L. Shear, 1129, 1158.*
District of Columbia: Takoma Park, *C. L. Shear, 964.*
Virginia: Crabbottom, *W. A. Murrill* (in N. Y. Bot. Gard. Herb.).
Florida: *W. W. Calkins, 860* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61455).
Alabama: Montgomery County, *R. P. Burke, 207, 208, 277, 347, 375, 376, 377, 424, 460, 468, 658, 662, 806, 807* (in Mo. Bot. Gard. Herb., 57080, 57081, 57159, 57218, 57245, 57244, 57243, 57261, 57282, 57287, 63085, 63087, 63109, and 63110 respectively).
Louisiana: St. Martinville, *A. B. Langlois, 2685, cl.*
Kentucky: Harlan, *C. H. Kauffman, 66* (in Mo. Bot. Gard. Herb., 16346).
Wisconsin: Blue Mounds, *Miss A. C. Stucki, 38;* Madison, *C. J. Humphrey, 2488* (in Mo. Bot. Gard. Herb., 11277).
Missouri: Creve Coeur Lake, *L. O. Overholts, 3166, 661* (in Mo. Bot. Gard. Herb., 5708, 5710).
Montana: Anaconda, Mt. Hagan, *J. R. Weir, 11253* (in Mo. Bot. Gard. Herb., 63256).
Idaho: Coolin, *J. R. Weir, 11505, 11516* (in Mo. Bot. Gard. Herb., 63286, 63289).
Manitoba: Winnipeg, *G. R. Bisby, 1345* (in Mo. Bot. Gard. Herb., 60555).
British Columbia: Cormac, *J. Macoun, 658* (in Mo. Bot. Gard. Herb., 55328); Sidney, *J. Macoun, 788* (in Mo. Bot. Gard. Herb., 55329); Vancouver Island, Oak Bay, *J. Macoun, 600* (in Mo. Bot. Gard. Herb., 55327); Victoria, *J. Macoun, 564* (in Mo. Bot. Gard. Herb., 55326).
Washington: Chehalis, *C. J. Humphrey, 6277.*
Oregon: Corvallis, *S. M. Zeller, 1851, 1855, 1904* (in Mo. Bot. Gard. Herb., 56863, 56864, 56880).

87. P. pertenuis (Karsten) Burt, n. comb.
Corticium pertenue Karsten, Hedwigia **29**: 270. 1890; Finska

Vet.-Soc. Bidrag Natur och Folk **51**: 226. 1892; Sacc. Syll. Fung. **9**: 234. 1891; v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **115**: 1556. 1906—(In part) *Gloeocystidium praetermissum* (Karst.) v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **115**: 1565. 1906.—An *Peniophora praetermissa* Karsten, Finska Vet.-Soc. Bidrag Natur och Folk **48**: 423. 1889?

Type: probably in Karsten Herb. and fragment in Burt Herb.

Fructifications long-effused, closely adnate, not separable when moist, very thin, waxy, even, white or whitish, drying pale pinkish buff to cream color, the margin thinning out; in section 60–150 μ thick, not colored, with the hyphae 3–4 μ in diameter, erect, branching, not incrusted, bearing the compact hymenium; gloeocystidia numerous, variable in form, often tapering, 20–60 × 6–8 μ; cystidia hair-like, not incrusted, 4–5 μ in diameter, protruding up to 20 μ beyond the basidia, few and scattered; spores copious, hyaline, even, curved, 7–10 × 4–5 μ.

Fructifications 2–10 cm. long, 1–2 cm. wide.

On decaying coniferous wood. In Europe, in Canada to District of Columbia, and in Oregon, Jamaica and Bermuda. July to November. Rare in North America.

The principal characteristics of *P. pertenuis* aiding in its recognition are occurrence in thin, whitish, waxy fructifications on old decaying coniferous wood, presence of gloeocystidia, and hair-like non-incrusted cystidia which are not destroyed in any degree by the treatment of the sections with potassium hydrate solution, and the curved spores. *P. tenuis* differs in having its cystidia incrusted at the tip. I have not seen an authentic specimen of *P. praetermissa* but the specimen sent to me under this name by Bresadola and one of the two specimens from Litschauer have their cystidia almost completely disintegrated by the potassium hydrate treatment in clearing and swelling the tissues of sections, as occurs also in *P. glebulosa*. Hence, I think that *P. praetermissa* may eventually be regarded by European mycologists as specifically distinct from *P. pertenuis*.

Specimens examined:

Finland: Mustiala, *P. A. Karsten*, portion of type, comm. by Bresadola, also authentic specimen on *Picea* from Karsten.

Sweden: Stockholm, *L. Romell, 116, 138, 162, 163, 164, 183, 191, 193, 203, 212, 215.*
Austria: Natters, Tirol, *V. Litschauer,* under the name *Gloeocystidium praetermissum.*
Canada: Ottawa, *J. Macoun, 42, 313;* St. Lawrence Valley, *J. Macoun, 41.*
New Hampshire: Chocorua, *W. G. Farlow, 5.*
New Jersey: Newfield, *J. B. Ellis* (in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb.).
District of Columbia: Washington, *C. J. Humphrey, 2525* (in Mo. Bot. Gard. Herb., 20383).
Montana: Trego, *J. R. Weir, 11969* (in Mo. Bot. Gard. Herb., 63227).
Idaho: Coolin, *J. R. Weir, 11512* (in Mo. Bot. Gard. Herb., 63287); Priest River, *J. R. Weir, 139* (in Mo. Bot. Gard. Herb., 63468).
Oregon: Portland, *C. J. Humphrey, 6127.*
Washington: Falcon Valley, *W. N. Suksdorf, 724.*
Bermuda: Paget Marsh, on *Sabal, H. H. Whetzel, Ao, Abd* (in Mo. Bot. Gard. Herb., 58719, 58906).
Jamaica: Troy and Tyre, *W. A. Murrill & W. Harris, 1053,* in part, comm. by N. Y. Bot. Gard. Herb.

88. P. tenuis (Pat.) Massee, Linn. Soc. Bot. Jour. **25**: 149. 1889.

Corticium tenue Patouillard, Rev. Myc. **7**: 152. 1885; Tab. Anal. Fung. **1**: 203. *f. 462.* 1886; Sacc. Syll. Fung. **6**: 632. 1889.—*Kneiffia tenuis* (Pat.) Bresadola, Ann. Myc. **1**: 105. 1903. —*Gloeocystidium tenue* (Pat.) v. Höhnel & Litschauer, Wiesner Festschr. Wien, 70. 1908; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 364. 1913.

Fructifications effused, closely adnate, thin, white, drying whitish to pale pinkish buff, somewhat pruinose, the margin thinning out; in section 60–180 μ thick, not colored, with the hyphae erect, branching, 3–4 μ in diameter, thin-walled, not incrusted; gloeocystidia 20–60 × 6–8 μ, flexuous; cystidia hair-like, cylindric, 4–6 μ in diameter, protruding 20–45 μ beyond the basidia, incrusted about the tip; spores hyaline, even, curved, 8–10 × 4–4½ μ.

Fructifications 2–6 cm. long, 1–2 cm. wide.

On decaying wood and bark of frondose species more usually. Europe and Massachusetts. July to December. Rare.

P. tenuis is doubtfully distinct from *P. pertenuis*, having the same aspect and microscopical characters except that some of the cystidia have incrusting granules at the tips, as shown in the figures by Patouillard cited above.

Specimens examined:

Germany: Westphalia, Lengerich, *W. Brinkmann*, comm. by Bresadola.

Austria: Tirol, *V. Litschauer*.

France: Allier, St. Priest, *H. Bourdot, 6530;* Aveyron, *A. Galzin, 11689*, comm. by H. Bourdot, 18554.

Massachusetts: Brookline, Hammond's Pond, *G. R. Lyman, 183.*

89. P. serialis (Bres.) v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **116**: 777. 1907.

Kneiffia serialis Bresadola, Ann. Myc. **1**: 101. 1903 (in part); Sydow, Myc. Germ., 1. 1903.—Not *Xerocarpus Cacao* Karsten, Hedwigia **29**: 271. 1890.—An *Corticium seriale* Fries, Epicr. 563. 1838?—*Corticium seriale* (Bres.) Bourdot & Galzin, Soc. Myc. Fr. Bul. **27**: 253. 1911 (Forme 2).

Type: type distribution in Sydow, Myc. Germ., 1.

Fructifications long and widely effused, thin, closely adnate, very variable in color, smoke-gray and pale olive-buff to wood-brown in the herbarium, even, sometimes cracked; the margin thinning out, indeterminate; in section 60–180 μ thick, not colored, composed of densely arranged, erect hyphae about 3 μ in diameter, with the outer portion of the wall gelatinously modified and indistinct, and of some scattered, yellowish or brownish, somewhat spherical masses 9–12 μ in diameter, immersed near the substratum; gloeocystidia in the unusual form of irregular, immersed spherical masses 9–12 μ in diameter; cystidia not incrusted, tapering to a sharp apex, 3–5 μ in diameter, protruding up to 30μ; spores hyaline, even, curved, 4–6 × 1–2 μ.

Fructifications 3–12 cm. long, 2–5 cm. wide.

On decaying wood of logs of *Pinus*, *Abies*, *Tsuga*, and *Thuja*. Europe, New York, and Washington. August to May.

P. serialis resembles in aspect *P. Cacao* and *Corticium lividum;*

from the latter, the more common species, it is distinguished by its cystidia and from both by the immersed, spherical, colored masses near the substratum, such as were described and figured for another species with larger spores as gloeocystidia by von Höhnel & Litschauer in K. Akad. Wiss. Wien Sitzungsber. **116**: 838. 1907.

Specimens examined:

Exsiccati: Sydow, Myc. Germ., 1.

Sweden: Femsjö, *E. A. Burt*, two gatherings.

Germany: Brandenburg, *P. Sydow*, type distribution, in Sydow, Myc. Germ., 1, and comm. by Bresadola.

New York: Floodwood, *C. H. Peck*, *8*.

Washington: Sedro Woolley, *C. J. Humphrey*, *7538*.

90. P. typhicola Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, thin, adnate, somewhat membranaceous, tender, between whitish and pale olive-buff in the herbarium, even, not shining, not cracked, the margin thinning out, indeterminate; in section 60–75 μ thick, not colored near the substratum, composed of suberect, densely interwoven, thin-walled hyphae 2–3 μ in diameter, indistinct, and of incrusted cystidia and a few gloeocystidia; gloeocystidia flexuous, 25–30 × 4–6 μ, few present; cystidia incrusted, 40 × 15 μ, immersed, starting from the substratum; paraphyses with filiform tips about ½–1 μ in diameter, with 1 or 2 lateral branches but not antler-shaped, in surface of hymenium; spores hyaline, even, 8–12 × 3½–4 μ, two to a basidium.

Fructifications 2–10 mm. in diameter.

On dead *Typha latifolia*. New York.

This specimen was at first doubtfully referred to *P. phyllophila* which it resembles in aspect and somewhat in structure, but it is thicker, more dense, has gloeocystidia, and does not have conspicuous antler-shaped paraphyses. Reference to *Epithele Typhae*, which I have been unable to find in our North American species, is precluded by the absence of hyphal fascicles.

Specimens examined:

New York: Ithaca, *G. F. Atkinson*, *261*, type.

91. P. filamentosa (Berk. & Curtis) Burt in Coker, Elisha Mitchell Scientif. Soc. Jour. **36**: 162. *pl. 32, f. 5, 6.* 1921.

Corticium filamentosum Berkeley & Curtis, Grevillea **1**: 178. 1873; Sacc. Syll. Fung. **6**: 619. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 154. 1890.—(In part) *Corticium Petersii* Berkeley & Curtis, Grevillea **1**: 177. 1873.—*Peniophora unicolor* Peck, N. Y. State Mus. Rept. **43**: 66. 1890; Sacc. Syll. Fung. **9**: 239. 1891.—An *Corticium radicatum* P. Hennings, Pilze Ostafrikas, 54. 1895; Sacc. Syll. Fung. **14**: 222. 1899? See v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **117**: 1093. 1908.

Type: in Kew Herb. and Curtis Herb.

Fructifications broadly effused, membranaceous, loosely adnate, separable when moistened, soft, drying Isabella color to buffy citrine, the margin and subiculum concolorous with, or a little paler than, the hymenium, often extended into, or connected with, branching mycelial strands or cords; in section 150–400 μ thick, colored, with the hyphae loosely interwoven, thin-walled, 3–4 μ in diameter, densely incrusted with ochraceous granules which are not soluble in lactic acid preparations, but dissolve quickly when sections are treated with potassium hydrate solution and leave the sections bleached, after first becoming vinaceous; cystidia incrusted, 40–50 × 6–8μ, protruding up to 40 μ, confined to the hymenial layer; spores white in spore collection, even, 3–5 × 2–3 μ.

Fructifications 2–10 cm. long, 1–3 cm. broad; sometimes much larger on logs by confluence longitudinally.

On decaying wood and logs and fallen limbs of frondose species. Germany, Canada to Alabama, and westward to Arizona, in Mexico, the West Indies, and Japan. July to January. Common.

Although colored like a *Coniophora*, *P. filamentosa* is easily recognized by its marginal mycelial strands, small and white spores, and hyphae incrusted with ochraceous granules which are soluble in the 7 per cent solution of potassium hydrate with which sections are usually treated. Since the original description of *Corticium Petersii* combines the characters of both *Peniophora sanguinea* and *P. filamentosa*, and one of the types is of one species

and the other of the other, *C. Petersii* has been reduced to synonymy and *C. filamentosum* of the same authors adopted for the present species.

Specimens examined:

Exsiccati: Ravenel, Fungi Car. **5**: 28, the type distribution of *Corticium Petersii*.

Germany: Hannover, *Engelke* (in Mo. Bot. Gard. Herb., 43481, under the name *Peniophora radicata*).

Canada: *J. Macoun, 298;* Lower St. Lawrence Valley, *J. Macoun, 6, 28, 38.*

New Hampshire: Franconia, *W. G. Farlow, 26.*

Vermont: Middlebury, *E. A. Burt,* two gatherings.

New York: Albany, *L. O. Overholts, 3389* (in Mo. Bot. Gard. Herb., 10179); Altamont, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55211); Bolton, *C. H. Peck, 15;* Bolton Landing, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55975, 56021); Cazenovia, *L. M. Underwood, 46* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61405); East Berne, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 56016); East Galway, *E. A. Burt,* two gatherings; East Schagticoke, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 56022); North Elba, *C. H. Kauffman, 9* (in Mo. Bot. Gard. Herb., 16769); North Greenbush, *H. D. House, 14.235* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 14840, 44734); Hudson Falls, *S. H. Burnham, 23* (in Mo. Bot. Gard. Herb., 54487); Ithaca, *G. F. Atkinson, 7892;* Staten Island, *W. H. Ballou* (in Mo. Bot. Gard. Herb., 10276); Syracuse, *L. M. Underwood,* type of *Peniophora unicolor* (in N. Y. State Mus. Herb.).

New Jersey: *J. B. Ellis,* comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 44645); Newfield, *J. B. Ellis, 1518,* comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 14645); Orange, *L. M. Underwood* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61576).

Maryland: Takoma Park, *C. L. Shear, 1097.*

North Carolina: Chapel Hill, *J. N. Couch,* Univ. N. C. Herb., 4607 (in Mo. Bot. Gard. Herb., 57423).

Alabama: *Peters,* type (in Kew Herb., and Curtis Herb., 6119),

and in Ravenel, Fungi Car. **5**: 28; Montgomery County, *R. P. Burke, 425, 660* (in Mo. Bot. Gard. Herb., 57270, 63086).
Kentucky: Crittenden, *C. G. Lloyd* (in Lloyd Herb., 10113, and Mo. Bot. Gard. Herb., 65627).
Ohio: *C. G. Lloyd, 3883;* Cincinnati, *C. G. Lloyd, 4504.*
Michigan: New Richmond, *C. H. Kauffman, 49* (in Mo. Bot. Gard. Herb., 3734).
Illinois: Riverside, *E. T. & S. A. Harper, 852.*
Missouri: Columbia, *B. M. Duggar, 447.*
Arizona: Fort Valley Experiment Station, *W. H. Long, 21121* (in Mo. Bot. Gard. Herb., 55138).
Mexico: Jalapa, *W. A. & E. L. Murrill, 178, 327*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 44969, 54496).
Cuba: *C. G. Lloyd, 420* (in Mo. Bot. Gard. Herb., 55173); Omaja, *C. J. Humphrey, 2782* (in Mo. Bot. Gard. Herb., 14850).
Jamaica: Troy and Tyre, *W. A. Murrill & W. Harris, 911*, comm. by N. Y. Bot. Gard. Herb.
Japan: Prov. Bunga, *A. Yasuda, 113* (in Mo. Bot. Gard. Herb., 59463).

92. P. viticola (Schw.) v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **116**: 779. *text f. 4.* 1907.

Thelephora viticola Schweinitz, Naturforsch. Ges. Leipzig Schrift. **1**: 107. 1822; Am. Phil. Soc. Trans. N. S. **4**: 168. 1832; Fries, Elenchus Fung. **1**: 205. 1828.—*Corticium viticola* Fries, Epicr. 561. 1838; Sacc. Syll. Fung. **6**: 617. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 146. 1890; Coker, Elisha Mitchell Scientif. Soc. Jour. **36**: 172. *pl. 33, f. 6.* 1921.—*Corticium crocicreas* Berkeley & Curtis, Grevillea **1**: 178. 1873; Sacc. Syll. Fung. **6**: 616. 1888. Not *C. crocicreas* Massee nor v. Höhnel & Litschauer.—*Corticium subaurantiacum* Peck, N. Y. State Mus. Rept. **43**: 67. 1890; Sacc. Syll. Fung. **9**: 230. 1891.

Type: in Schweinitz Herb.

Fructifications effused, thin, adnate, soft, small portions separable when moistened, the tomentose subiculum and margin ochraceous orange, the hymenium even, grayish to buff-yellow and pruinose; in section 150–400 μ thick, with the denser and broader subhymenial region ochraceous orange and the more

loosely interwoven region next to the substratum yellow, the loosely interwoven hyphae thin-walled, 2–4 μ in diameter, not nodose-septate, incrusted with colored granules which give the color to the fructification, and are destroyed and dissolved by the action of potassium hydrate solution leaving the sections bleached; no gloeocystidia; cystidia not incrusted, thin-walled, cylindric, 6–9 μ in diameter, protruding 25–40 μ beyond the basidia; basidia with 4 sterigmata; spores white in collection on slide, even, 7–8 × 4–5 μ.

Fructifications 1–2 cm. in diameter, becoming confluent over areas 3–8 cm. long, 2–5 cm. wide.

On bark and wood of decaying *Vitis*, *Abies*, *Acer*, and *Fagus*. Vermont to North Carolina, Kentucky, and Arkansas. July to October. Abundant locally.

P. viticola is conspicuous by the large, brilliant orange fructifications with paler, pruinose fertile hymenium which occur on rotting large stems of the wild grape and on logs in deep mountain forests. The bleaching of the sections through destruction and solution of the incrusting pigment granules is common also to *P. filamentosa*, from which *P. viticola* differs in more orange color and larger spores.

Specimens examined:

Exsiccati: Ravenel, Fungi Car. **3**: 34.

Vermont: Bread Loaf, *E. A. Burt;* Little Notch, *E. A. Burt;* Middlebury, *E. A. Burt*, determination as *Corticium subaurantiacum* confirmed by Peck.

New York: Ampersand, *C. H. Peck* (in N. Y. State Mus. Herb., T 20, and Mo. Bot. Gard. Herb., 54638); Clear Water, *G. F. Atkinson, 5043* (in Cornell Univ. Herb.); Floodwood, *E. A. Burt;* Lake Placid, *W. A. & E. L. Murrill, 104* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 57344); Long Lake, *A. H. W. Povah, 13* (in Mo. Bot. Gard. Herb., 9084); Marcy Trail, *C. H. Peck* (in N. Y. State Mus. Herb., T 19, and Mo. Bot. Gard. Herb., 54637); North Elba, *C. H. Kauffman, 3* (in Mo. Bot. Gard. Herb., 6686); Ray Brook, *C. H. Peck* (in N. Y. State Mus. Herb., T 21, and Mo. Bot. Gard. Herb., 54639); Undercliff, comm. by Univ. Wis. Herb., 45.

North Carolina: Salem, *Schweinitz*, type (in Herb. Schweinitz).

Alabama: *Peters*, in Ravenel, Fungi Car. **3**: 34, and as *Corticium crocicreas* Berk. & Curtis, type (in Kew Herb. and in Curtis Herb., 4542).

Kentucky: Mammoth Cave, *C. G. Lloyd, 1601, 2661*, and another specimen comm. by Ellis Herb.

Arkansas: Fordyce, *C. J. Humphrey, 5799*.

93. P. sulphurina (Karst.) v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **115**: 1573. 1906.

Tomentella sulphurina Karsten, Finska Vet.-Soc. Bidrag Natur och Folk **48**: 420. 1889.—*Hypochnus sulphurinus* (Karst.) Sacc. Syll. Fung. **9**: 243. 1891.

Type: authentic specimen—perhaps part of type—in Burt Herb.

Fructifications effused, adnate, the hymenium drying clay color, thin, brittle, even, here and there cracked and showing the mustard-yellow subiculum, the margin fibrillose-byssoid, mustard-yellow; in section 150–400 μ thick, pale yellow, with the hyphae loosely arranged, thin-walled, 4–6 μ in diameter, occasionally nodose-septate, some hyphae granule-incrusted; cystidia hair-like, not incrusted, 3–6 μ in diameter, protruding up to 30 μ, not numerous; spores hyaline, even, 3–4 × 2–2½ μ.

Fructifications 2–6 cm. long, 1–2 cm. broad.

On coniferous bark usually. In Finland, from New Hampshire to Alabama and westward to British Columbia and Oregon. August to November. Rare.

The American gatherings referred to *P. sulphurina* are a little paler than the European and the sections lose most of their color when floated on alcohol in sectioning so as to become not distinctly colored in section. In other respects our specimens agree so well with the authentic specimen that I believe they should be included in this species. Potassium hydrate solution does not change the color of the sections to vinaceous and bleach them as it does sections of *P. filamentosa*.

Specimens examined:

Finland: Jalasjärvi, authentic specimen from *P. A. Karsten*.

New Hampshire: Chocorua, *W. G. Farlow* (in Mo. Bot. Gard. Herb., 7872).

New York: Fall Creek, *G. F. Atkinson, 7993;* Ithaca, *E. J. Petey*, comm. by C. J. Humphrey, 471; Rainbow, *C. H. Peck* (in

N. Y. State Mus. Herb., T 32, and Mo. Bot. Gard. Herb., 54656); Yates, *C. H. Peck, 33.*

Pennsylvania: Delaware Water Gap, *W. A. Murrill*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 61469).

New Jersey: Newfield, *J. B. Ellis*, comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 7764, 14290, 14770).

District of Columbia: Takoma Park, *C. L. Shear, 1348.*

Alabama: Montgomery, *R. P. Burke, 145* (in Mo. Bot. Gard. Herb., 10359).

Kentucky: Crittenden, *C. G. Lloyd, 3120.*

South Dakota: Sylvan Lake, Custer, *J. R. Weir, 10011* (in Mo. Bot. Gard. Herb., 55792).

Idaho: Priest River, *J. R. Weir, 30.*

British Columbia: Squamish, *J. Macoun, 497, 534* (in Mo. Bot. Gard. Herb., 55182, 55181).

Oregon: Eugene, *C. J. Humphrey, 1051.*

94. P. carnosa Burt, n. sp.

Type: in Burt Herb., Mo. Bot. Gard. Herb., and N. Y. State Mus. Herb.

Fructifications long and broadly effused, thick, fleshy-membranaceous, adnate, barium-yellow to honey-yellow, of the same color within where cracked, the margin determinate, thinning out, somewhat radiate-fibrillose; in section 400–700 μ thick, colored like the hymenium in thick sections but very thin sections hyaline, somewhat zoned, composed of a very broad hyphal layer bearing a hymenial layer 50–60 μ thick, the hyphae hyaline, 5–6 μ in diameter; no gloeocystidia; cystidia hair-like, not incrusted, tapering to a sharp tip, 4 μ in diameter at the base, protruding up to 30 μ beyond the basidia, very numerous in the hymenial surface; basidia 4-spored; spores white in spore collection, even, 4–5 × 2–2½ μ.

Fructifications 3–12 cm. long, 1½–6 cm. wide.

On bark and wood of coniferous logs such as *Pinus, Abies, Picea, Pseudotsuga, Juniperus,* and *Larix,* rarely on frondose species. In mountains of New England, New York, Minnesota, and British Columbia and Montana to New Mexico. May to October. Common in the Rocky Mountain forests.

P. carnosa may be recognized at sight by its large, thick, yellow fructifications occurring on coniferous logs in forests of the White Mountains, Adirondacks, and the Rocky Mountains. The abundant cystidia are too small to be visible with a lens, hence it is necessary to examine sections with a microscope to recognize the species as a *Peniophora* rather than a *Corticium*. It does not have the mustard-yellow subiculum of *P. sulphurina* nor does its hymenial layer flake away from the substratum as in the latter.

Specimens examined:

Maine: Piscataquis County, *W. A. Murrill, 2311* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61596).

New Hampshire: Chocorua, *E. A. Burt;* Intervale, *L. O. Overholts, 5039* (in Mo. Bot. Gard. Herb., 56351); North Conway, *L. O. Overholts, 4732* (in Mo. Bot. Gard. Herb., 56117).

New York: Hague, *C. H. Peck,* type (in Burt Herb., N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 56019); North Elba, *C. H. Kauffman, 4* (in Mo. Bot. Gard. Herb., 21307).

Minnesota: Cass Lake, *J. R. Weir, 392* (in Mo. Bot. Gard. Herb., 12436).

Montana: Fortine, *E. E. Hubert,* comm. by J. R. Weir, 12013 (in Mo. Bot. Gard. Herb., 63323); Missoula, *J. R. Weir, 383* (in Mo. Bot. Gard. Herb., 20892).

Idaho: Meadow Creek, *E. E. Hubert,* comm. by J. R. Weir, 11669, 11671 (in Mo. Bot. Gard. Herb., 63308, 63310); Priest River, *E. E. Hubert,* comm. by J. R. Weir, 11738 (in Mo. Bot. Gard. Herb., 63311), *J. R. Weir, 355, 9100* (in Mo. Bot. Gard. Herb., 10883, 55955), and *26, 32, 51, 57, 62, 69.*

British Columbia: Kootenai Mts. near Salmo, *J. R. Weir, 450, 458, 464, 467, 468, 469, 479, 523, 530* (in Mo. Bot. Gard. Herb., 8767, 9121, 12613, 12287, 8766, 12534, 12907, 20976, and 16078 respectively).

Washington: Olympia, *C. J. Humphrey, 6291.*

New Mexico: Cienega Canyon, *W. H. Long, 21470, 21515, 21561* (in Mo. Bot. Gard. Herb., 55148, 55149, 55150); Sulphur Canyon, *W. H. Long, 21411* (in Mo. Bot. Gard. Herb., 55147); Tyom Experiment Station, *W. H. Long, 21935* (in Mo. Bot. Gard. Herb., 55151).

95. P. citrinella (B. & C.) Burt, n. comb.

Corticium citrinellum Berkeley & Curtis, Linn. Soc. Bot. Jour. **10**: 336. 1868; Sacc. Syll. Fung. **6**: 616. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 147. 1890.

Type: in Curtis Herb. and probably in Kew Herb.

Fructifications effused, thin, tender, small pieces separable when moistened, barium-yellow, cracked and showing a byssoid, barium-yellow subiculum, the margin thinning out, sometimes with barium-yellow mycelial strands; in section 120–300 μ thick, barely barium-yellow when but slightly magnified but not perceptibly colored under high magnification and wholly bleached by treatment with potassium hydrate solution, 2-layered, with the broader layer next to the substratum and composed of loosely interwoven hyphae 2½–3 μ in diameter under the incrustation of scattered, coarse granules, not nodose-septate, and with the hymenial layer 90 μ thick, compact; no gloeocystidia; wholly immersed cystidia few, incrusted, 15 × 9 μ; protruding cystidia hair-like, short, 3–4½ μ in diameter, protruding up to 12 μ; spores hyaline, even, 3–4 × 2–3 μ.

Fructifications 1–3 cm. long, ½–1 cm. wide.

On bark of logwood limb on the ground. West Indies. October to March.

P. citrinella belongs in the group of species with *P. sulphurina*, *P. limonia*, *P. Burtii*, and *P. subiculosa*, and appears distinct from each of these when specimens are compared with one another. It has priority over all the others as a species. Its distinguishing combination of characters is barium-yellow color, cracked hymenium showing subiculum of the same color, color bleached by treatment with potassium hydrate solution, short cystidia, and occurrence on frondose bark.

Specimens examined:

Cuba: *C. Wright, 844*, type (in Curtis Herb.); Pinar del Rio Province, *Earle & Murrill, 381*, comm. by N. Y. Bot. Gard. Herb.; Santa Clara Province, *Earle & Murrill, 427*, comm. by N. Y. Bot. Gard. Herb.

Jamaica: Hope Gardens, *F. S. Earle, 164*, comm. by N. Y. Bot. Gard. Herb.

96. P. Sacchari Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications longitudinally effused, adnate, thin, somewhat membranaceous, noted as yellow when growing but now clay color in the herbarium, even, cracking into polygonal masses about ½ mm. in diameter which may curl away from the substratum more or less and show the exposed tissue colored like the hymenium, the margin thinning out, of finely interwoven hyphae; in section 75–110 μ thick, with the thin sections not colored appreciably, composed of densely arranged, suberect hyphae about 3 μ in diameter, not incrusted, not nodose-septate; no gloeocystidia; cystidia not incrusted, tapering towards the apex, 5–6 μ in diameter, protruding up to 30 μ; spores hyaline, even, 3½–4 × 2½–3 μ.

Fructifications 8 cm. long, 10–13 mm. wide.

On cane trash of *Saccharum officinarum*. Porto Rico. January.

P. Sacchari was listed by Johnston & Stevenson, Dept. of Agr. Porto Rico Jour. **1**: 227. 1917, as *Peniophora* sp. It has not been received from other sources and is apparently a species local to Porto Rico or with a preference for a sugar-cane substratum. It should be conspicuous by its yellow color. *P. citrinella* is thicker and has incrusted cystidia.

Specimens examined:

Porto Rico: Rio Piedras, *J. A. Stevenson, 1204*, type (in Mo. Bot. Gard. Herb., 11787).

97. P. medioburiensis Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, thin, felty, small pieces separable when moistened, becoming in the herbarium between light grayish olive and deep olive-buff, the margin thinning out and sometimes paler; in section 200–300 μ thick, colored like the surface, somewhat zonate, composed of suberect, thin-walled, even-walled hyphae 3 μ in diameter and of incrusted hyphae 5 μ in diameter over the incrustation; no gloeocystidia; cystidia usually not incrusted, sometimes granule-incrusted, cylindric, obtuse, 6–8 μ in diameter, protruding up to 30 μ beyond the basidia; basidia with 4 large sterigmata up to 6 μ long; spores white in spore collection, cylindric, 8–14 × 4½–6 μ.

Fructifications 5 mm.–3 cm. long, 5 mm.–1½ cm. wide.

On wood and bark of fallen, rotten limbs of *Carya*. Middlebury, Vermont. July. Seen but once.

This species is of felty or fibrillose structure like some species of *Hypochnus*, not at all waxy, and of dull, olivaceous color so as to be very inconspicuous on the fallen decaying limbs on which found. So few species of *Peniophora* have spores up to 14 μ long that the spore dimensions should prove in this instance an important character for recognition of *P. medioburiensis*.

Specimens examined:

Vermont: Battell Ledge, Middlebury, *E. A. Burt*, type.

98. P. subsulphurea (Karst.) v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **115**: 1580, 1592. 1906; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 388. 1913.

Corticium subsulphureum Karsten, Soc. pro Fauna et Fl. Fennica Meddel. **6**: 12. 1881; Sacc. Syll. Fung. **6**: 632. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 148. 1890.—*Xerocarpus subsulphureus* Karsten, Finska Vet.-Soc. Bidrag Natur och Folk **37**: 138. 1882; **48**: 417. 1889. See v. Höhnel & Litschauer, K. Akad. Wiss. Wien Sitzungsber. **117**: 1093. 1908.—*Corticium subincarnatum* Peck, N. Y. State Mus. Rept. **42**: 122. 1889; Sacc. Syll. Fung. **9**: 232. 1891.

Type: authentic specimen in Burt Herb., and specimen cited by Karsten in Roumeguere, Fungi Gall., 4307.

Fructifications longitudinally effused, adnate, at first citron-yellow, soon cinnamon-buff, even, pulverulent, the margin thinning out, citron-yellow; in section 150–400 μ thick, with the hymenial layer and that next to the substratum usually slightly colored, the hyphae suberect and branching or loosely interwoven, thin-walled, hyaline, 3–4 μ in diameter, nodose-septate, not incrusted except perhaps with a few minute grains in the subhymenium; hymenium becoming 2-layered; cystidia hair-like, thin-walled, even or with a few incrusting granules, 4–5 μ in diameter, protruding up to 40 μ; spores white in spore-collection, 4–5½ × 2–2½ μ.

Fructifications 4–10 cm. long, 1–3 cm. broad.

On decaying decorticated wood of *Pinus* and *Abies* in mountain

forests. Europe and northern United States and Canada westward to Idaho and Manitoba. July to October. Uncommon.

This species may be recognized by its cinnamon-buff, yellow-margined, closely adnate fructifications which occur, so far as known at present, only on bare wood of spruce and pine. I cannot understand how von Höhnel & Litschauer, *loc. cit.*, could have regarded *P. subsulphurea* as perhaps not specifically distinct from the Hannover specimens of *P. radicata* (*P. filamentosa*) which have their hyphae heavily incrusted with a yellow matter soluble in potassium hydrate solution, and much larger, more incrusted cystidia, and fructifications only loosely adnate when present on decorticated wood and margined with conspicuous mycelial strands.

Specimens examined:

Finland: Mustiala, *P. A. Karsten*, authentic specimen of *Xerocarpus subsulphureus*.

Sweden: *L. Romell, 182*.

France: Aveyron, *A. Galzin, 21033*, comm. by H. Bourdot, 18426.

Canada: Lower St. Lawrence Valley, *J. Macoun, 62*.

New York: Cascade, *C. H. Peck* (in N. Y. State Mus. Herb., T. 31, and Mo. Bot. Gard. Herb., 56072); Clear Lake, *G. F. Atkinson, 5048;* Floodwood, *E. A. Burt, C. H. Peck, 5*, and an unnumbered specimen (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 56017); North Elba, *C. H. Peck*, type of *Corticium subincarnatum* (in N. Y. State Mus. Herb.).

Minnesota: Vermilion Lake, *E. W. D. Holway, 155*, the *Corticium epichlorum* of Geol. & Nat. Hist. Survey of Minn. but not *C. epichlorum* Berk. & Curtis (in U. S. Dept. Agr. Herb. and Burt Herb.).

Montana: Melrose, *E. E. Hubert*, comm. by J. R. Weir, 11431 (in Mo. Bot. Gard. Herb., 63270).

Idaho: Priest River, *J. R. Weir, 14*.

Manitoba: Norway House, *G. R. Bisby, 1478* (in Mo. Bot. Gard. Herb., 61660).

99. P. martiana (Berk. & Curtis) Burt, n. comb.

Corticium martianum Berkeley & Curtis, Grevillea **1**: 179.

1873; Peck, N. Y. State Mus. Rept. **30**: 48. 1879; **40**: 76. 1887; Sacc. Syll. Fung. **6**: 633. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 144. 1890.

Type: type distribution in Ravenel, Fungi Car. **5**: 30.

Fructifications widely effused, rather thick, somewhat tubercular or rugose, waxy, drying cinnamon to liver-brown and burnt umber and so hard as to require prolonged moistening before sectioning, the margin thinning out; in section 200–400 μ thick, colored like the hymenium, becoming dark vinaceous when treated with potassium hydrate solution, 2-layered, with the layer next to the substratum composed of longitudinally arranged, honey-yellow hyphae 3 μ in diameter, and with the hymenial layer thicker, denser, darker, and composed of densely interwoven hyphae and scattered cystidia; no gloeocystidia; cystidia incrusted, conical, 30–45 × 8–12 μ, wholly immersed or protruding up to 30 μ beyond the basidia; spores hyaline, even, 4–4½ × 2½–3 μ.

Fructifications 1–10 cm. long, 1–4 cm. wide.

On very rotten wood of frondose species—*Betula* and *Populus* noted. Massachusetts to Alabama and in Ohio and Idaho. September to November. Rare.

P. martiana is usually blood-red in color, with substance of the same color, and with surface so tubercular or with so irregular folds as to suggest a *Phlebia*. It is likely to be confused with *Phlebia hydnoidea* Schw., from which it is sharply distinct by the more toothed surface and slightly colored cystidia of the latter.

Specimens examined:

Exsiccati: Ravenel, Fungi Car. **5**: 30, type distribution.

Massachusetts: *Murray* (in Curtis Herb., 6251).

New York: Ithaca, *H. L. Jackson*, comm. by Cornell Univ. Herb., 18659; Keene Valley, Adirondack Mts., *W. G. Farlow*.

West Virginia: Eglon, *C. G. Lloyd, 02678*.

Florida: *R. Thaxter, 14* (in Mo. Bot. Gard. Herb., 43934).

Alabama: *Peters*, in Ravenel, Fungi Car. **5**: 30.

Ohio: College Hill, *C. G. Lloyd, 1659*.

Idaho: Coolin, *J. R. Weir, 11116* (in Mo. Bot. Gard. Herb.. 63251).

100. P. alutaria Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, closely adnate, very thin, not at all separable, clay color in the herbarium, somewhat lacunose in some places, somewhat granular where thickest, the margin thinning out; in section 120–160 μ thick, showing a little color when only little magnified and giving the characteristic color to the fructification but hyaline under high magnification, composed of densely arranged, interwoven, suberect hyphae 3–3½ μ in diameter, not incrusted; no gloeocystidia; cystidia of two kinds: cylindric, hair-like, flexuous cystidia 3–3½ μ in diameter, not incrusted protrude up to 30 μ beyond the basidia and sometimes have capitate tips; smaller incrusted cystidia 10 × 3 μ are present at surface of hymenium; basidia 4-spored; spores white in spore collection, even, subglobose, 3–3½ × 3 μ.

Fragmentary pieces of fructifications are up to 5 cm. long, 2 cm. wide.

Type on wood of hardwood log of a frondose species in mountain woods, also on *Larix*. Vermont and Michigan. November. Rare.

P. alutaria seems possible of recognition by its clay color, closely adnate fructifications, and small spores and cystidia.

Specimens examined:

Vermont: Little Notch, Bristol, *E. A. Burt*, type.

Michigan: pole yard, Escanaba, *C. J. Humphrey, 1783* (in Mo. Bot. Gard. Herb., 42931).

101. P. separans Burt, n. sp.

Type: in Mo. Bot. Gard. Herb. and Dodge Herb.

Fructifications broadly effused, adnate, somewhat membranaceous, small pieces separable when moistened, between pale ochraceous buff and avellaneous in the herbarium, even, somewhat cracked and showing the darker substance in the sides of the fissures, the margin thinning out, slightly darker, somewhat radiately fibrillose, adnate; in section 300–350 μ thick, colored, stratose, each stratum 2-layered, the supporting layer composed of densely and longitudinally interwoven, slightly colored hyphae 3–3½ μ in diameter, the hymenial layer 75–

120 μ thick, composed of densely arranged, erect tissue; no gloeocystidia nor conducting organs; cystidia incrusted, 40–50 × 8–15 μ, numerous, immersed, starting from the base of the hymenial layer; spores hyaline, even, 8–10 × 2–3 μ.

Fructifications probably large, for those studied are 4 cm. long by 4 cm. wide and broken off on three sides.

On bark of coniferous log. British Columbia. September.

P. separans has some resemblance in color and aspect to *P. ciliata* and resupinate *Stereum sanguinolentum*, but the stouter, wholly immersed cystidia distinguish *P. separans* from the former species, and the presence of cystidia and lack of conducting organs from the latter. The type has two strata, the other specimen only a single stratum of two layers.

Specimens examined:

British Columbia: Porcupine Creek, south of Beavermouth, *C. W. Dodge*, *1702*, type, and *1704* (in Mo. Bot. Gard. Herb., 58797, 58798, and in Dodge Herb.).

102. P. stratosa Burt, n. sp.

Type: in Mo. Bot. Gard. Herb.

Fructifications broadly effused, adnate, thick, stratose, somewhat cartilaginous-coriaceous, hard when dry, becoming pinkish buff to light ochraceous buff in the herbarium, cracking in drying and showing the stratose context, the margin thinning out; in section 700 μ thick, pale yellowish, composed of 8 strata in the type, with the hyphae hyaline, densely interwoven and conglutinate, about 2–2½ μ in diameter; cystidia incrusted, conical, 45–55 × 10–13 μ, protruding up to 40 μ, present in all strata but more abundant and conspicuous in the outer half of the fructification and less distinct and perhaps becoming absorbed in the more deeply buried strata; spores copious, hyaline, even, 4–5 × 2–2½ μ.

Fructification 8 cm. long, 3½ cm. wide in the single piece constituting the type, which has natural margin on one side only and was broken from a larger mass.

On *Quercus densiflora* and *Eucalyptus*. California and Mexico. September.

P. stratosa is related to *P. similis* but has larger cystidia and spores.

Specimens examined:

California: Pinehurst, *E. E. Bethel, 26273* (in Mo. Bot. Gard. Herb., 55437); Redwood Park, *W. H. Long, 18514*, type (in Mo. Bot. Gard. Herb., 55065).

Mexico: *A. Dampf*, comm. by J. R. Weir, 63537 (in Mo. Bot. Gard. Herb., 63710).

103. P. tabacina Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, adnate, tawny olive to snuff-brown, the hymenium becoming cracked and showing in the fissures the concolorous subiculum, the margin thinning out, colored like the hymenium; in structure 150–400 μ thick, tawny olive throughout, 2-layered, with the layer next to the substratum composed of loosely interwoven, even-walled, colored hyphae 3–3½ μ in diameter, nodose-septate, not incrusted, and the hymenial layer about equal in thickness to the other, with its hyphae densely crowded together in a palisade layer and bearing basidia and sterigmata and containing some somewhat colored spores; cystidia not incrusted, cylindric, 6–8 μ in diameter, protruding up to 80 μ; basidiospores hyaline, even, 6–9 × 2½–3 μ, copious; slightly colored spores 9 × 3 μ are present in the deeper portion of the hymenial layer of the type specimen.

Fructifications 2–9 cm. long, 1–2½ cm. broad.

On decaying coniferous wood and bark of logs. Wisconsin, Colorado, Washington, and Oregon. July to November. Rare.

P. tabacina is distinguished by its tobacco color throughout and hyphae and cystidia lacking incrustation. It lacks the radiate filamentous margin of *P. filamentosa* of somewhat similar color as well as the hyphal incrustation of the latter. The presence of colored spores in the subhymenium is suggestive of *Stereum rugisporum*, a species of the same color, occurring on coniferous substrata in the same regions, and more abundant material may show that *P. tabacina* is the thin, first-stratum stage of the latter, but the fructifications at hand are closely adnate to the substratum rather than loosely connected with it by the tomentose layer characteristic of many resupinate Stereums.

Specimens examined:

Wisconsin: Oconto Falls, *C. J. Humphrey, 9445* (in Mo. Bot. Gard. Herb., 57176).
Colorado: Ouray, *C. L. Shear, 1185*, type.
British Columbia: Agassiz, *J. R. Weir, 330* (in Mo. Bot. Gard. Herb., 63728); Sidney, *J. Macoun, 19* (in Mo. Bot. Gard. Herb., 5734).
Washington: Olympia, *C. J. Humphrey, 6343;* Seattle, *C. J. Humphrey, 6456;* Sedro-Woolley, *C. J. Humphrey, 7578* (in Mo. Bot. Gard. Herb., 10753).
Oregon: Corvallis, on prune bark, *Mrs. E. B. Zeller*, comm. by S. M. Zeller, 1871 (in Mo. Bot. Gard. Herb., 56872); Eugene, *C. J. Humphrey, 6096.*

104. P. fusco-marginata Burt, n. sp.

Type: in Burt Herb. and probably in Lloyd Herb.

Fructifications long-effused, membranaceous, separable, becoming pinkish buff to warm buff in the herbarium, not waxy nor cracked, the extreme margin byssoid, fuscous, colored like the supporting hyphal layer next to the substratum; in section 300–320 μ thick, colored next the substratum, 2-layered with (1) the layer next to the substratum composed of longitudinally arranged hyphae 4–5 μ in diameter, not incrusted, not nodose-septate, fuscous along the substratum, becoming colorless above, and (2) the hymenial layer of equal thickness, composed of colorless, erect hyphae somewhat granule-incrusted in an incrusted zone; no gloeocystidia; cystidia not incrusted, 6 μ in diameter at base, tapering to the apex, protruding up to 30–40 μ beyond the basidia; spores hyaline, even, 5–6 × 3–3½ μ.

Fructifications 1–10 cm. long, the largest broken off at both ends, ½–2½ cm. wide.

On bark of fallen decaying frondose limbs. Florida and Louisiana. June and July. Local.

P. fusco-marginata has the unusual character of a colored layer of coarse, fuscous hyphae running over the substratum and only more or less completely covered by the buff, fertile portion of the fructification, so that the protruding colored portion forms a distinctive fuscous margin. The Florida specimen is sterile and too young for confident reference.

Specimens examined:

Florida: Snapper Creek Hammock, *W. A. Murrill, 226*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62083).

Louisiana: St. Martinville, *A. B. Langlois, 1947* and *100*, type, comm. by Lloyd Herb., 2771.

105. P. similis (B. & C.) Massee, Linn. Soc. Bot. Jour. **25**: 147. 1889.

Corticium simile Berk. & Curtis, Linn. Soc. Bot. Jour. **10**: 337. 1868; Sacc. Syll. Fung. **6**: 631. 1888.

Type: in Kew Herb. and Farlow Herb., and a fragment in Burt Herb.

Fructifications broadly effused, adnate, becoming light buff to cream color in the herbarium, somewhat velutinous, cracked, the margin thin; in section marguerite-yellow and darker next to the substratum but with yellow color bleached by action of potassium hydrate solution on the sections, 200–500 μ thick in the type but finally up to 2 mm. thick, composed of densely arranged, erect hyphae 3 μ in diameter, and of great numbers of cystidia; cystidia incrusted, not colored, conical or fusiform, 15–25 × 6–8 μ, very numerous in all regions; spores hyaline, even, allantoid, 4 × 1 μ, borne 4 to a basidium.

Fructifications "spreading for several inches." Fragmentary specimens examined are 1–4 cm. in diameter.

On under side of frondose logs and fallen limbs. Florida, Mexico, West Indies, and Japan. October to March. Probably common.

P. similis closely resembles *Corticium portentosum* in aspect, and I am unable to distinguish it from the latter except by examination with the microscope which reveals the abundant, small, colorless cystidia. *P. tephra* is closely related but does not form as thick fructifications, and its fructifications are less cracked, darker-colored in section, with darker, thicker-walled, more erect and more crowded hyphae, and slightly larger spores.

Specimens examined:

Florida: Cutler Hammock, *W. A. Murrill, 63*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62093); Royal Palm Hammock, *W. A. Murrill, 112, 113, 119, 122, 125*, all

comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62094–62098, 62110).

Mexico: Guernavaca, *W. A. & E. L. Murrill, 537*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54553); Orizaba, *W. A. & E. L. Murrill, 777*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54612); Xuchiles, near Cordoba, *W. A. & E. L. Murrill, 1211*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54600).

Cuba: *C. Wright, 543*, type (in Kew Herb., Farlow Herb., and Burt Herb.), *C. G. Lloyd, 432* (in Mo. Bot. Gard. Herb., 55171); Alto Cedro, *Earle & Murrill, 433, 553*, both comm. by N. Y. Bot. Gard. Herb.; Ceballos, *C. J. Humphrey, 2678, 2813, 2834* (in Mo. Bot. Gard. Herb., 9087, 14855, 14837); Managua, *Earle & Murrill, 42*, comm. by N. Y. Bot. Gard. Herb.; San Diego de los Baños, *Earle & Murrill, 203, 260, 303*, all comm. by N. Y. Bot. Gard. Herb.

Porto Rico: Rio Piedras, *J. A. Stevenson & R. C. Rose, 6530* (in Mo. Bot. Gard. Herb., 55072).

Bermuda: *B. & J. Dodge*, comm. by N. Y. Bot. Gard. Herb.

Jamaica: Cinchona, *W. A. & E. L. Murrill, 598, 658*, comm. by N. Y. Bot. Gard. Herb.; Troy and Tyre, *W. A. Murrill & W. Harris, 886, 1053*, in part, comm. by N. Y. Bot. Gard. Herb.

Grenada: Grand Etang, *R. Thaxter*, comm. by W. G. Farlow, 7, 8.

Japan: Mt. Tsukikuma, Prov. Bungo, *A. Yasuda, 100* (in Mo. Bot. Gard. Herb., 57018).

106. P. Seymouriana Burt, n. sp.

Type: type in Mo. Bot. Gard. Herb. and probably in Farlow Herb.

Fructifications long and broadly effused, thin, closely adnate, small portions separable when moistened, Verona brown to mummy-brown or fuscous, somewhat velvety, cracking into small areas, the margin determinate, entire; in structure 60–180 μ thick, colored throughout like the hymenium, composed of erect, colored, densely interwoven hyphae 3 μ in diameter, not incrusted, not nodose-septate, and of cystidia in all regions; no gloeocystidia; hymenial surface velvety through very numerous

branched paraphyses having final branches 1 μ in diameter; cystidia incrusted, 20–35 × 12–15 μ, usually wholly immersed; spores not found.

Fructifications 12 cm. long and broken off at ends, 3 cm. wide.

On fallen decaying branches of undetermined frondose species. Georgia and Cuba. August and April. Probably rare.

P. Seymouriana has general aspect suggestive of a resupinate *Hymenochaete* or the effused stroma of an *Hypoxylon*. The fructifications are thinner than those of *P. tephra*, with less numerous cystidia and with the much darker hymenium becoming cracked like that of *Hymenochaete corrugata*.

Specimens examined:

Georgia: Glen Ella, Tallulah Falls, *A. B. Seymour*, type, comm. by Farlow Herb., G (in Mo. Bot. Gard. Herb., 44613).

Cuba: *C. G. Lloyd, 145* (in Mo. Bot. Gard. Herb., 55495).

107. P. laevigata (Fr.) Massee, Linn. Soc. Bot. Jour. **25**: 149. Je. 1889; Karsten, Finska Vet.-Soc. Bidrag Natur och Folk **48**: 426. O. 1889; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 408. 1913; Rea, Brit. Basid. 696. 1922.

Thelephora laevigata Fries, Elenchus Fung. **1**: 224. 1828.—*Corticium laevigatum* Fries, Epicr. 565. 1838; Hym. Eur. 656. 1874; Sacc. Syll. Fung. **6**: 628. 1888.—*Xerocarpus Juniperi* Karsten, Rev. Myc. **3**[9]: 22. 1881.—*Kneiffia laevigata* (Fr.) Bresadola, Ann. Myc. **1**: 104. 1903.

Fructifications effused, thin, snuff-brown, drab, or pale drab-gray, adnate, small pieces separable from the bark when moistened, becoming cracked when dry, the margin at length free; in section brown, 200 μ thick, composed of very numerous, colored cystidia and thin-walled, hyaline hyphae 2–4 μ in diameter; cystidia colored, cylindric-clavate or fusiform, 25–50 × 5–6 μ, thick-walled and rough above or perhaps somewhat incrusted, very numerous in all regions and giving their color to the trama as a whole; spores hyaline, even, 7–8 × 3–4 μ.

Fructifications 2½–12 cm. long, ½–4 cm. broad.

On bark of *Juniperus*. Canada, New York, and Europe. April and September. Rare.

This species may be recognized by its occurrence on *Juniperus*,

brown color within, and abundance of colored cystidia. European authors record it on bark of living *Juniperus communis*, but the data with the two American specimens which I have seen gave merely the kind of substratum, one of these being *Juniperus virginiana*.

Specimens examined:

Exsiccati: de Thümen, Myc. Univ., 2014, authentic specimen from Karsten of *Xerocarpus Juniperi*.

Sweden: *L. Romell, 104, 105, 106;* Femsjö, *L. Romell, 407*.

Finland: Mustiala, *P. Karsten*, in de Thümen, Myc. Univ., 2014.

Italy (?): locality not given, *G. Bresadola*.

England: Buckden, Yorkshire, *E. M. Wakefield* (in Mo. Bot. Gard. Herb., 57119).

Canada: *J. Macoun, 24*.

New York: Orient, Long Island, *R. Latham* (in Mo. Bot. Gard. Herb., 58907, and Burt Herb.).

108. P. tephra (B. & C.) Cooke, Grevillea **8**: 20. *pl. 123, f. 6.* 1879; Sacc. Syll. Fung. **6**: 643. 1888; Massee, Linn. Soc. Bot. Jour. **25**: 143. 1889.

Corticium tephrum Berk. & Curtis, Linn. Soc. Bot. Jour. **10**: 336. 1868.

Type: in Kew Herb., and in Curtis Herb. mounted on left of card, that on the right is *Stereum albobadium*.

Fructifications effused, adnate, between tilleul-buff and drab, becoming drab in the herbarium, somewhat velutinous, the margin thin, adnate, concolorous; in section brown throughout, zonate, 400–550 μ thick, composed of erect, flexuous, thick-walled, somewhat colored hyphae 3–4 μ in diameter, densely crowded together, and of very numerous cystidia; cystidia coarsely incrusted, conical, sometimes fusiform, 15–25 × 6–9 μ, protruding up to 9–12 μ, not colored, very numerous, throughout the whole fructification; spores hyaline, even, 5 × 2½–3 μ.

Fructifications 2–6 cm. long, ½–2 cm. broad.

On dead wood of frondose species. Mexico, Cuba, Porto Rico, and Bermuda. October to January.

Former accounts of *P. tephra* are erroneous because they were partly based on a gathering of resupinate *Stereum albobadium*.

P. tephra belongs in the group with *P. laevigata* and *P. pruinata* but does not have the colored cystidia of the former nor the pruinose hymenium of the latter. The Australian specimen from Berkeley under the name *P. tephra*, in N. Y. Botanical Garden Herbarium, has colored cystidia and is more probably *P. laevigata*.

Specimens examined:

Mexico: Motzorongo, near Cordoba, *W. A. & E. L. Murrill, 997*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54623).

Cuba: *C. Wright*, type (specimen in Curtis Herb. mounted on left side of card); Ceballos, *C. J. Humphrey, 2692* (in Mo. Bot. Gard. Herb., 21942); Ciego de Avila, *Earle & Murrill, 592*, comm. by N. Y. Bot. Gard. Herb.; Herradura, *Earle & Murrill, 143*, comm. by N. Y. Bot. Gard. Herb.

Porto Rico: Bayamon, *J. A. Stevenson, 6760* (in Mo. Bot. Gard. Herb., 55059).

Bermuda: Agricultural Station, *H. H. Whetzel, Ak* (in Mo. Bot. Gard. Herb., 58909).

109. P. pruinata (B. & C.) Burt, n. comb.

Stereum pruinatum Berk. & Curtis, Linn. Soc. Bot. Jour. **10**: 332. 1868; Sacc. Syll. Fung. **6**: 583. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 198. 1890.

Type: in Kew Herb. and Farlow Herb.

Effused, adnate, drying pale neutral gray to drab-gray, pruinose, cracking when thick, the margin very thin; in section fuscous throughout, becoming zonate and finally 1 mm. thick, composed of densely arranged, erect, colored hyphae 3 μ in diameter and of very numerous cystidia in all regions of the section; cystidia incrusted, fusiform, 18–22 × 6–12 μ; spores hyaline, even, subglobose, about 3–4½ × 2½–3 μ in the few found.

Fructifications probably cover large areas, for those are 5–10 × 1–5 cm. and fractured on 3 or all sides in the specimens seen.

On rotting hardwood logs. Florida, Alabama, Mexico, and the West Indies. June to March. Occasional.

Dried specimens have the livid or cinereous color of some forms of *P. cinerea* but with surface of rather more velvety tex-

ture, often not cracked at all or, when cracked, into areas ranging down to about 5 mm. in diameter. The fructifications of *P. pruinata* are much thicker than those of *P. cinerea* and darker throughout. When moistened, small pieces may be separated from the bark for sectioning.

Specimens examined:

Florida: Cocoanut Grove, *R. Thaxter, 77* (in Farlow Herb., and Mo. Bot. Gard. Herb., 43897); Otter Creek, *C. J. Humphrey, 6703* (in Humphrey Herb.); Palm Beach, *H. von Schrenk* (in Mo. Bot. Gard. Herb., 43043).

Alabama: Montgomery County, *R. P. Burke, 374* (in Mo. Bot. Gard. Herb., 57242).

Mexico: Motzorongo, near Cordoba, *W. A. & E. L. Murrill, 988* (in Mo. Bot. Gard. Herb., 54621); Orizaba, *W. A. & E. L. Murrill, 764*, in part, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 54635).

Cuba: *C. Wright, 193*, type (in Farlow Herb., and Kew Herb.); Alto Cedro, Santiago de Cuba Province, *Earle & Murrill, 516, 518, 544, 555*, comm. by N. Y. Bot. Gard. Herb.; Ceballos, *C. J. Humphrey, 2815*.

Porto Rico: Mount Morales, near Utuado, *Mrs. E. G. Britton & D. W. Marble, 1204*, comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 61486).

Jamaica: Hope Gardens, *W. A. Murrill, 2*, comm. by N. Y. Bot. Gard. Herb.; Moneague to Union Hill, *W. A. Murrill, 1176*, comm. by N. Y. Bot. Gard. Herb.

110. P. rimosissima (B. & C.) Burt, n. comb.

Corticium rimosissimum Berkeley & Curtis, Am. Acad. Arts & Sci. Proc. **4**: 124. 1858; Sacc. Syll. Fung. **6**: 639. 1888; Massee, Linn. Soc. Bot. Jour. **27**: 122. 1890.—An *Stereum umbrinum* Berk. & Curtis?

Type: type distribution in C. Wright, Plants of U. S. North Pacific Expl. Exp., 110.

Fructifications broadly effused, rather thick, dry, membranaceous, separable in rather large pieces, pliant when dry, now bister in the herbarium, not shining, even, cracking through the colored hymenium into polygonal masses 1–4 to a mm. and

showing the underlying pale substance, the true margin unknown; in section 360–450 μ thick, colored in the hymenial layer, with the basal layer composed of obliquely ascending, loosely interwoven, thin-walled, hyaline hyphae 3–4 μ in diameter, not incrusted, not nodose septate, and of thick-walled, non-staining, hyaline organs 4½ μ in diameter, not incrusted, whose pointed tips protrude as cystidia up to 12 μ beyond the basidia; spores hyaline, even, 6 × 4½ μ—few found and may not belong.

Fragmentary fructifications not having margin are 4 cm. long, 2 cm. wide.

On dead cane. Nicaragua.

P. rimosissima is closely related in color and structure to *Stereum umbrinum* but has colorless cystidia not incrusted and only 4½–6 μ in diameter, and thinner fructifications which are not known yet to occur reflexed.

Specimens examined:

Nicaragua: *C. Wright*, type (in U. S. Dept. Agr. Herb.).

111. P. Weiri Bresadola, Mycologia **17**: 70. 1925.

Type: in Weir Herb.

Fructifications long and broadly effused, thin, closely adnate, becoming cream-buff to chamois in the herbarium, even, somewhat cracked, the margin thinning out; in section 150 μ thick, concolorous with, and giving the color to, the fructification, composed of densely interwoven, rigid, slightly colored hyphae 2–3½ μ in diameter, not incrusted; gloeocystidia flexuous or sometimes filamentous, 30–75 × 3–5 μ; cystidia not incrusted, thin-walled, cylindric, obtuse, 6–8 μ in diameter, protruding up to 40–50 μ beyond the basidia, not numerous; basidia with 4 sterigmata; spores hyaline, even, cylindric, 6–8 × 3–3½ μ, copious.

Fructifications 5–12 cm. long, 2–4 cm. wide.

On wood of decaying logs of *Pinus monticola*. Idaho. September.

The gloeocystidia of *P. Weiri* are unusual in their position, since they are occasionally oblique or parallel with the substratum, and more elongated then than when in the more usual, erect position, nor did they become visible in my sections stained with

eosin until the sections have cleared somewhat in the permanent glycerine mount. The color of the densely interwoven tissue of the fructification should aid in recognition of the species.

Specimens examined:

Idaho: Priest River, *J. R. Weir, 23345*, type (in Weir Herb.).

112. P. Farlowii Burt, n. sp.

Type: in Burt Herb.

Fructifications effused, closely adnate, rather thick, pale olive-buff in the herbarium, even, somewhat cracked and showing the tissue to be horn-like and somewhat resin-colored (pecan-brown) where exposed on sides of the fissures, the margin thinning out, composed of finely interwoven hyphae; in section 250–350 μ thick, somewhat colored, inclosing some portions of the substratum, composed of densely interwoven and conglutinate hyphae 2–3 μ in diameter, not incrusted, not nodose-septate, indistinct; no gloeocystidia; cystidia incrusted, 30–70 × 12–15 μ, protruding up to 30 μ, few and scattered; spores hyaline, even, 4 × 2 μ.

Fructifications in fragments 2–3 cm. long, 2 cm. wide.

On very rotten frondose wood. New Hampshire. September.

P. Farlowii shows in the dried specimen a pale olive-buff hymenium covering a horn-like, somewhat resin-colored underlying layer; the cystidia are so large as to be a good distinctive character.

Specimens examined:

New Hampshire: Chocorua, Bowditch Swamp, *W. G. Farlow, 16*, type.

113. P. colorea Burt, n. sp.

Type: in Burt Herb.

Fructifications longitudinally effused, very thin, closely adnate, light drab, not shining, even, the margin thinning out, indeterminate; in section 70–80 μ thick, light drab, 2-layered, with a layer along the substratum about 30 μ thick, of densely longitudinally interwoven, somewhat colored hyphae about 3 μ in diameter, indistinct, conglutinate, and with a colored hymenial layer of erect basidia, paraphyses, and cystidia; no gloeocystidia;

cystidia incrusted, slightly colored, fusiform, 24–33 × 12–15 μ, few, immersed in the hymenial layer; spores of a crushed preparation cylindric, hyaline, even, curved, 8–10 × 2–3 μ.

Fructifications 3–9 cm. long, 1–1½ cm. wide.

On bark of dead branches about 1–½ cm. in diameter, of frondose species. Louisiana. December.

P. colorea belongs near the *P. cinerea* group of very variable species. It may well prove that *P. colorea* is not a specifically distinct member of this group when more abundant material from southern Louisiana is available, but it seems to me distinct now by the longitudinal layer next to the substratum, light drab color throughout, few, large, slightly colored cystidia which are confined to the hymenial layer, and by the slender, elongated spores.

Specimens examined:

Louisiana: St. Martinville, *A. B. Langlois, ch,* type.

114. P. decorticans Burt, n. sp.

Type: in Burt Herb.

Fructifications long-effused, closely adnate, very thin, growing on the wood, spreading longitudinally and laterally between the wood and bark, loosening the latter, pale pinkish buff and pale gull-gray to whitish, pruinose, with occasional tubercules in some specimens; in section brownish throughout, 50–90 μ thick, not zonate, composed of densely arranged, interwoven, slightly colored, erect hyphae 3 μ in diameter, with no darker and opaque zone next to the substratum; cystidia few, incrusted, ovoid to subglobose, up to 20–25 × 15 μ, seen only in the region next to the substratum; paraphyses with slender, antler-shaped branches protrude from hymenium; spores hyaline, even, slightly curved, 8–9 × 3 μ, few seen.

Fructifications 1–2 cm. wide, 2 cm.–6 m. long, on under side of dead branches along which the loosened bark curls back laterally.

On *Quercus Garryana*, *Acer macrophyllum*, and *Rhus diversiloba*. Washington and Oregon. February to December. Common locally.

P. decorticans differs from *P. cinerea*, *P. nuda*, *P. caesia*, and *P. violaceo-livida* in not being so dark as to be opaque next to the

substratum. Its most noteworthy character, by which it may be recognized at a glance, is its curious habit of forming the fructification on bark-covered limbs between the bark and the wood, so that the loosened bark—very noticeable on *Quercus* limbs—curls back, disclosing the fructification closely adnate on the wood. The antler-shaped branching paraphyses occur in *P. phyllophida* also.

Specimens examined:

Washington: Bingen, *W. N. Suksdorf, 910*, type, *756, 757, 758*.

Oregon: Corvallis, *C. Epling* (in Mo. Bot. Gard. Herb., 60183), *S. M. Zeller, 1769, 2258* (in Mo. Bot. Gard. Herb., 56846, 63028).

115. P. nuda (Fr.) Bresadola, I. R. Accad. Agiati Atti III. **3**: 114. 1897; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 405. 1913; Rea, Brit. Basid. 695. 1922.

Thelephora nuda Fries. Syst. Myc. **1**: 447. 1821.—*Corticium nudum* Fries, Epicr. 564. 1838; Patouillard, Tab. Anal. Fung. **2**: 33. *f. 582*. 1887; Sacc. Syll. Fung. **6**: 626. 1888.—*Peniophora ochracea* Massee, Linn. Soc. Bot. Jour. **25**: 150. 1889, but not *Corticium ochraceum* Fries.

Illustrations: Patouillard, *loc. cit.*

Fructification effused, closely adnate, very thin, pale drab-gray, pale purplish gray or pale gull-gray, pruinose, waxy, cracking in drying; in section brownish, darker and opaque next the substratum, 75–160 μ thick, the hyphae densely interwoven, rather erect, 3 μ in diameter, somewhat colored; cystidia incrusted, in all regions of the fructification, usually about 20–25 × 6 μ, larger near the substratum and sometimes up to 15 μ in diameter; spores hyaline, even, curved, 4½–9 × 2½–3 μ, reported larger by European authors.

Fructifications 2–6 × 1–2 cm.

On fallen limbs of frondose species such as *Acer*, *Quercus*, *Populus*, etc. Canada to Texas, in Europe and Japan. April to January. Occasional.

I have seen no authentic specimens of *P. nuda*, but the European concept of this species differs from *P. cinerea* in having the fructifications more whitish gray in color, more broadly effused,

and less evidently formed by confluence of several small fructifications and with some cystidia near the substratum of greater diameter than those elsewhere. I have seen no spore collections, and it is possible that the spore measurements given above are too small, since they are based on spores found in preparations of sections.

Specimens examined:

Exsiccati: Ravenel, Fungi Am., 454, under the name *Corticium ochraceum*.

Canada: Ottawa, *J. Macoun, 26*.

Vermont: Middlebury, *E. A. Burt*.

New York: Alcove, *C. L. Shear, 1306;* Altamont, *E. A. Burt*.

New Jersey: Newfield, *J. B. Ellis* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61338).

Maryland: Takoma Park, *C. L. Shear, 1358*.

Virginia: *C. L. Shear, 1181*.

South Carolina: Pinopolis, in Ravenel, Fungi Am., 454.

Georgia: Atlanta, *E. Bartholomew, 8981* (in Mo. Bot. Gard. Herb., 63459).

Florida: Daytona, *R. A. Harper, 5* (in Mo. Bot. Gard. Herb., 54538).

Alabama: Auburn, *F. S. Earle* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 63415).

Louisiana: Baton Rouge, *C. W. Edgerton, 830*.

Texas: Beaumont, *C. J. Humphrey, 5936*.

Japan: Province Bungo, *N. Nakayma*, comm. by A. Yasuda, 125 (in Mo. Bot. Gard. Herb., 59471).

116. P. argentea Ellis & Everhart in herb., n. sp.

Type: in N. Y. Bot. Gard. Herb. and Mo. Bot. Gard. Herb.

Fructifications effused, closely adnate, thin, pallid mouse-gray to drab-gray, pruinose, cracked in drying, the margin darker and thinning out; in section brown and opaque with exception of the hyaline hymenial layer, 150 μ thick, with the hyphae densely interwoven, thick-walled, stiff, 3–3½ μ in diameter, colored as in *Hymenochaete*, not incrusted; cystidia not incrusted, partially destroyed and rendered nearly invisible by potassium hydrate solution, tapering upward to a point, protruding up to 30 μ,

6–7 μ in diameter, often colored for 20 μ at the base and there with the aspect of buried setae; basidia deteriorated; no spores found.

Fructifications 4–8 cm. long, 1–1½ cm. broad.

On bark and decorticated wood of decaying *Fraxinus*. Louisiana. January. Probably rare.

This species has the color and aspect of *P. nuda* and *P. caesia* but differs from both of these and also from *P. cinerea* in having its opaque basal layer 120 μ thick, comprising the whole thickness of the fructification except the hymenium, and in having its hyphae thick-walled and distinct and colored as in *Hymenochaete*. The cystidia differ from those of the species just named and also *P. pruinata* in not being incrusted and are noteworthy by being attacked and partially dissolved by 7 per cent solution of potassium hydrate to such a degree that they are best studied when sections are mounted in lactic acid.

Specimens examined:

Louisiana: St. Martinville, *A. B. Langlois, 1758*, type (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 63416).

117. P. violaceo-livida (Sommf.) Bresadola in Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 405. 1913; Rea, Brit. Basid. 695. 1922.

Thelephora violaceo-livida Sommerfelt, Fl. Lapp. Suppl. 283. 1826.—*Corticium violaceo-lividum* (Sommf.) Fries, Epicr. 564. 1838; Hym. Eur. 655. 1874; Sacc. Syll. Fung. **6**: 627. 1888.

Fructifications somewhat effused, closely adnate, rather thick, tubercular, pale mouse-gray to drab-gray, often round; in section brownish, 100–300 μ thick, becoming zonate within, darker and opaque next to the substratum, the hyphae somewhat colored, densely arranged, erect; cystidia incrusted, 20–30 × 6–9 μ, distributed in all regions, very numerous; spores hyaline, even, curved, 6–9 × 2½–4 μ, as found with sections.

Fructifications 1–4 × ½–2 cm., often with the component masses rounded, 5–7 mm. in diameter.

On fallen limbs of *Salix*, *Prunus*, *Fraxinus Castanea*, and *Quercus*. Canada to Louisiana. March to October. Rare.

The concept of this species presented by Bresadola, which has

become generally accepted in Europe, is followed here except that I have referred to this species effused fructifications with tuberculate surface, thick and zonate within, as well as fructifications consisting of aggregations of small, round masses. The specimen received from Bresadola has the latter form and is on *Prunus Cerasus;* one from Romell on *Salix*, the substratum first cited for the species, has a similar zonate structure within and a tubercular surface but is more effused than that from Bresadola.

Specimens examined:

Lappland: *Sommerfelt*, authentic specimen under the name *Thelephora fallax* var. *violaceo-livida* (in Herb. Fries).

Sweden: *L. Romell, 71.*

Austria: Hall in Tirol, *V. Litschauer.*

Italy probably: locality not stated, *G. Bresadola.*

Canada: Ontario, Ottawa, *J. Macoun, 27, 131.*

Vermont: Middlebury, *E. A. Burt*, two gatherings.

Massachusetts: near Boston, *E. A. Burt.*

New Jersey: Newfield, *J. B. Ellis* (in Mo. Bot. Gard. Herb., 61339).

Maryland: Takoma Park, *C. L. Shear, 1027.*

District of Columbia: Soldiers Home, *C. L. Shear, 1116.*

Louisiana: Baton Rouge, *Edgerton & Humphrey*, comm. by C. J. Humphrey, 2521.

118. P. cinerea (Pers.) Cooke, Grevillea **8**: 20. *pl. 123, f. 8.* 1880; Sacc. Syll. Fung. **6**: 643. 1888; Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 407. 1913; Rea, Brit. Basid., 696. 1922.

Corticium cinereum Persoon, Roemer Neues Mag. Bot. **1**: 111. 1894; Fries, Epicr. 563. 1838; Hym. Eur. 654. 1874.—*Thelephora cinerea* § *Corticium* Persoon, Syn. Fung. 579. 1801; Myc. Eur. **1**: 148. 1822; Fries, Elenchus Fung. **1**: 221. 1828.—*Kneiffia cinerea* (Fr.) Bresadola, Ann. Myc. **1**: 103. 1903.—*Corticium fumigatum* de Thümen, Torr. Bot. Club Bul. **6**: 95. 1876; Myc. Univ., 513. 1876.—*Thelephora lilacina* Schweinitz, Am. Phil. Soc. Trans. N. S. **4**: 168. 1832.—*Peniophora lilacina* (Schw.) Massee, Linn. Soc. Bot. Jour. **25**: 147. 1889.

Illustrations: Fries, Icones Hym., *pl. 198, f. 4;* Cooke, *loc. cit.;* Patouillard, Tab. Anal. Fung. *f. 251.*

Fructifications effused, closely adnate, very thin, in small patches becoming confluent, lurid, ashy in various shades as pale drab-gray, pale mouse-gray, and cinnamon-drab, pruinose, waxy, becoming cracked in drying; in section 50–100 μ thick usually, brownish, darker and opaque near the substratum, the hyphae densely interwoven, 3 μ in diameter, somewhat colored; cystidia incrusted, 25–40 × 4½–9 μ, distributed throughout the section; spores hyaline, even, cylindric, 6–9 × 2–3 μ, borne 4 to a basidium.

Fructifications 2–5 × ½–1 cm.; when scattered 2–5 mm. in diameter.

On fallen limbs of *Alnus*, *Acer*, *Prunus*, *Pyrus*, *Quercus*, and most other frondose and coniferous species. Throughout North America, West Indies, Europe, southern Africa, and Japan—probably cosmopolitan. Our commonest species. Throughout the year.

P. cinerea may be recognized by its resemblance to a thin coat of ashy gray or slightly tinted paint on the bark of fallen limbs; the substance of the sections is brownish when viewed with a hand lens, and dark and opaque next the substratum under the compound microscope. *P. caesia*, *P. nuda*, and *P. violaceo-livida* must be cautiously separated from *P. cinerea*, for all are closely related.

Specimens examined:

Exsiccati: Berkeley, Brit. Fungi, 63, 64; Ellis, N. Am. Fungi, 21, under the name *Corticium fumigatum*, 610; Ell. & Ev., Fungi Col., 610, 805, under the name *C. fumigatum;* de Thümen, Myc. Univ., 513, type distribution of *C. fumigatum*, 1206; Sydow, Myc. Germ., 205.

Sweden: *L. Romell, 69, 70.*

England: in Berkeley, Brit. Fungi, 63, 64; Kew Gardens, *E. M. Wakefield* (in Mo. Bot. Gard. Herb., 57121).

Germany: Brandenburg, in Sydow, Myc. Germ., 205; Berlin, *P. Magnus* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55803).

Austria: Lengerich, *Brinkmann*, comm. by G. Bresadola; Tirol, three specimens, comm. by V. Litschauer.

Italy: Trento, *G. Bresadola;* Vallambrosa, *Cavara*, comm. by G. Bresadola.

Newfoundland: Bay of Islands, *A. C. Waghorne, 989* (in Mo. Bot. Gard. Herb., 5009).

Canada: *J. Macoun, 8, 9, 50.*

Quebec: Hull, *J. Macoun.*

Ontario: London, *J. Dearness, 169a, 169c* (in Mo. Bot. Gard. Herb., 11350, 5629); Ottawa, *J. Macoun, 334.*

Maine: Portage, *L. W. Riddle.*

New Hampshire: Chocorua, *W. G. Farlow, 147* (in Mo. Bot. Gard. Herb., 55262) and three specimens in Burt Herb.; North Conway, *A. S. Rhoads, 8* (in Mo. Bot. Gard. Herb., 56977), *W. H. Snell, 627* (in Mo. Bot. Gard. Herb., 59294).

Vermont: Middlebury, *E. A. Burt,* nine gatherings.

Massachusetts: Arlington, *E. A. Burt, A. P. D. Piguet,* comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 43959); Billerica, *E. A. Siegler* (in Mo. Bot. Gard. Herb., 55035); Boston, *E. A. Burt;* Stoneham, *C. L. Shear, 1239.*

Connecticut: Portland, *G. P. Clinton* (in Mo. Bot. Gard. Herb., 43945).

New York: Albany, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 15955, 57517, 59673, 59690, 59695), *L. O. Overholts, 3388* (in Mo. Bot. Gard. Herb., 6989), *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55987, 57516, 57518); Alcove, *C. L. Shear, 248, 1006, 1100, 1138, 1216, 1300;* Carrollton, *C. H. Peck* (in Mo. Bot. Gard. Herb., 56012); East Galway, *E. A. Burt;* Greenbush, *C. H. Peck* (in N. Y. State Mus. Herb., 74, and Mo. Bot. Gard. Herb., 55776); Hudson Falls, *S. H. Burnham, 19* (in Mo. Bot. Gard. Herb., 54504); Ithaca, *G. F. Atkinson, 674, 8218, H. S. Jackson,* Cornell Univ. Herb., 14394, *C. O. Smith,* comm. by G. F. Atkinson, 8223; Karner, *H. D. House* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 54369); Knox, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55751); Menands, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55805); Middle Grove, *E. A. Burt;* Van Cortland Park, New York City, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55977); Orient, *R. Latham, 181* (in Mo. Bot. Gard. Herb., 44227); Selkirk, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard.

Herb., 55773); Van Etten, Tioga County, *W. C. Barbour, 1365* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61400); West Albany, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55749); Westport, *C. H. Peck* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55750); White Plains, *L. M. Underwood* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61588); Willsboro Point, *C. O. Smith;* West Fort Ann, *S. H. Burnham, 17* (in Mo. Bot. Gard. Herb., 44046).

New Jersey: Newark, *H. S. Jackson;* Newfield, *J. B. Ellis* (in Mo. Bot. Gard. Herb., 4818), *1076, 1078,* comm. by W. G. Farlow (in Mo. Bot. Gard. Herb., 14762, 7459), comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 61448), in Ellis, N. Am. Fungi, 21, 610, in Ell. & Ev., Fungi Col., 610, 805, and de Thümen, Myc. Univ., 513, 1206; Belleplain, *C. L. Shear, 1165.*

Pennsylvania: Bethlehem, *Schweinitz,* type of *Thelephora lilacina* (in Farlow Herb. and Kew Herb.).

Maryland: Takoma Park, *C. L. Shear, 962, 1028, 1076, 1162, 1349.*

District of Columbia: Takoma Park, *C. L. Shear, 515* (in N. Y. State Mus. Herb., and Mo. Bot. Gard. Herb., 55808), *1353;* Washington, *C. L. Shear, 1200, 1258.*

Virginia: Park Lane, *W. H. Long, 18509* (in Mo. Bot. Gard. Herb., 55061).

North Carolina: Blowing Rock, *G. F. Atkinson, 4328, 8030.*

Georgia: Atlanta, *E. Bartholomew, 5676* (in Mo. Bot. Gard. Herb., 44252).

Florida: New Smyrna, *W. A. Murrill, 5,* comm. by N. Y. Bot. Gard. Herb. (in Mo. Bot. Gard. Herb., 62085).

Alabama: Auburn, *F. S. Earle,* unnumbered specimens and *42* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61399, 61452), and *F. S. Earle & C. F. Baker* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61428); Montgomery and Montgomery County, *R. P. Burke, 9, 11, 42, 120, 449, 455, 458, 461, 469, 513, 818* (in Mo. Bot. Gard. Herb., 16360, 22340, 21100, 19555, 57277, 57280, 57283, 57288, 57303, 63117).

Louisiana: Baton Rouge, *Edgerton & Humphrey, 5727a, 5666.*

Tennessee: *J. R. Weir, 7558* (in Mo. Bot. Gard. Herb., 55464).

Ohio: Norwood, *C. G. Lloyd, 1576.*

Indiana: Crawfordsville, *A. R. Bechtel, 12* (in Mo. Bot. Gard. Herb., 59660); Millers, *E. T. & S. A. Harper, 939.*

Illinois: Barry, *H. W. Anderson* (in Mo. Bot. Gard. Herb., 55966); Cypress, *C. J. Humphrey, 1359* (in Mo. Bot. Gard. Herb., 22522); River Forest, *E. T. & S. A. Harper, 676, 757;* Riverside, *E. T. & S. A. Harper, 677.*

Michigan: Ann Arbor, *C. H. Kauffman* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 61396); Gogebic County, *E. A. Bessey, 56, 78, 183, 216, 236, 371* (in Mo. Bot. Gard. Herb., 56545, 56549, 56580, 56546, 56590, 56635); Michigan Agricultural College, *B. O. Longyear* (in Mo. Bot. Gard. Herb., 55704); New Richmond, *E. W. Hartwell* (in Mo. Bot. Gard. Herb., 58163); Vermilion, *A. H. W. Povah, 242* (in Mo. Bot. Gard. Herb., 58163).

Wisconsin: Blue Mounds, comm. by Univ. Wis. Herb., 28; Madison, *E. Bartholomew 6652* (in Mo. Bot. Gard. Herb., 57039), *M. C. Jensen,* comm. by C. J. Humphrey, 2432 (in Mo. Bot. Gard. Herb., 4835), and *W. Trelease* (in Mo. Bot. Gard. Herb., 4816, 43988, 43989).

Minnesota: Lake Itaska, *E. L. Jensen, 5* (in Mo. Bot. Gard. Herb., 12530); Univ. Farm Campus, St. Paul, *E. L. Jensen, 3* (in Mo. Bot. Gard. Herb., 4203).

Missouri: Columbia, *B. M. Duggar, 572, 574;* Creve Coeur Lake, *L. O. Overholts, 3159* (in Mo. Bot. Gard. Herb., 5714).

Nebraska: Lincoln, *C. L. Shear, 1054, 1058, 1342.*

Colorado: Golden, *E. Bethel & L. O. Overholts, 1744* (in Mo. Bot. Gard. Herb., 54870).

Manitoba: Winnipeg, *A. H. R. Buller,* comm. by G. R. Bisby, 878, and *G. R. Bisby, 1348* (in Mo. Bot. Gard. Herb., 58995, and 60554 respectively).

British Columbia: Salmo, *J. R. Weir, 444* (in Mo. Bot. Gard. Herb., 6243); Sidney, *J. Macoun, 6, 775* (in Mo. Bot. Gard. Herb., 5765, 55324).

Washington: Bingen, *W. N. Suksdorf, 700, 701, 721, 744, 759, 861, 885, 918, 954, 960, 963;* Corvallis, *S. M. Zeller, 2262* (in Mo. Bot. Gard. Herb., 63033); Chelan, *J. R. Weir, 5490* (in Mo. Bot. Gard. Herb., 58260); Kalama, *C. J. Humphrey, 6219;*

Washougal, *R. H. Turk*, comm. by S. M. Zeller, 2630 (in Mo. Bot. Gard. Herb., 63057).

California: Berkeley, comm. by W. A. Setchell, 1032 (in Mo. Bot. Gard. Herb., 44241); Stanford University, *C. F. Baker, 12;* Sierra Nevada Mountains, *W. H. Harkness, 1025* (in Kew Herb., under the name *Peniophora carnea* Berk. & Cke.).

Mexico: Guernavaca, *W. A. & E. L. Murrill, 358, 407* (in N. Y. Bot. Gard. Herb., and Mo. Bot. Gard. Herb., 54470, 54532).

Cuba: San Antonio de los Baños, Havana Province, *Earle & Murrill, 73*, comm. by N. Y. Bot. Gard. Herb.

Porto Rico: Rio Piedras, *J. A. Stevenson, 2451, 2920, 3067, 5581, 5638* (in Mo. Bot. Gard. Herb., 9185, 3125, 9055, 6957, 54585).

Jamaica: Chester Vale, *W. A. & E. L. Murrill, 334*, comm. by N. Y. Bot. Gard. Herb.; Cinchona, *W. A. & E. L. Murrill, 596*, comm. by N. Y. Bot. Gard. Herb.; Troy and Tyre, *W. A. & E. L. Murrill, 894*, comm. by N. Y. Bot. Gard. Herb.

Africa: Stellenbosch, Cape Colony, *P. A. van der Bijl, 326* (in Mo. Bot. Gard. Herb., 63397).

Japan: Mt. Mikuma, Province Awaji, *A. Yasuda, 4* (in Mo. Bot. Gard. Herb., 55666).

119. P. caesia Bresadola in Bourdot & Galzin, Soc. Myc. Fr. Bul. **28**: 406. 1913; Rea, Brit. Basid., 695. 1922.

Corticium caesium Bresadola, Fungi Trid. **2**: 39. *pl. 145, f. 2.* 1892; Sacc. Syll. Fung. **11**: 126. 1895.

Illustrations: Bresadola, *loc. cit.*

Type: authentic specimen in Burt Herbarium.

Fructifications broadly effused, closely adnate, very thin, pale mouse-gray to pale purplish-gray, delicately pruinose, cracked in drying, the margin similar; in section brownish, 40–90 μ thick, dark and opaque next to substratum; hyphae densely interwoven, somewhat colored; cystidia near the substratum 15–25 × 10–20 μ, incrusted, becoming slightly colored, not numerous; spores hyaline, even, curved, 6–8 × 2½–3 μ as found in preparations of sections, probably larger in spore falls.

Fructifications 2–10 × 1–2 cm.

On fallen limbs of *Syringa, Betula, Quercus*, and other frondose

species. Vermont to District of Columbia, in Missouri, and in Europe. March to December. Rare.

P. caesia is more widely effused than *P. cinerea*, is not formed by confluence of many small fructifications, and has much the color and aspect of *P. nuda* but differs from the latter in absence of the numerous, small cystidia.

Specimens examined:

Exsiccati: Roumeguère, Fungi Gallici, 2910, under the name *Corticium incarnatum*, 3213, under the name *Corticium cinereum*.

Austria: Vienna, comm. by V. Litschauer.

Italy: Trient, *G. Bresadola*, authentic specimen.

France: in Roumeguère, Fungi Gallici, 2910, 3213.

Vermont: Lake Dunmore, *E. A. Burt.*

District of Columbia: Washington, Department Grounds, on *Syringa vulgaris*, *C. L. Shear*, *1264*, in part, and an unnumbered specimen.

Missouri: Columbia, *B. M. Duggar*, *448*.

120. P. carnea (Berk. & Cooke) Cooke, Grevillea **8**: 21. *pl. 124, f. 11.* 1879; Sacc. Syll. Fung. **6**: 644. 1888; Massee, Linn. Soc. Bot. Jour. **25**: 151. 1889.

Corticium carneum Berkeley & Cooke, New York Acad. Sci. Ann. **1**: 179. 1878; Linn. Soc. Bot. Jour. **17**: 141. 1878.

Type: in Kew Herb.

Fructification effused, closely adnate, thin, ochraceous flesh-color, drying avellaneous and cracked, the margin whitish and fibrillose; in section brownish, 100–120 μ thick, with a dark, semi-opaque zone next to the substratum; hyphae densely interwoven, 3–3½ μ in diameter, slightly colored, somewhat longitudinally interwoven next to the substratum; cystidia incrusted, of two kinds—very large cystidia resembling conical or subglobose crystalline masses 45–75 × 30–75 μ are seated on the opaque zone, other cystidia 25–35 × 6–8 μ are scattered throughout the region between the dark zone and the surface of the hymenium; gloeocystidia flexuous, 40–50 × 4–4½ μ, not numerous; spores hyaline, even, slightly curved, 8–12 × 3–4 μ.

Fructifications 1–6 cm. long, ½–2 cm. broad.

On logs and fallen, decaying, frondose limbs. Texas and Cuba. March. Rare.

The thin, closely adnate fructifications of *P. carnea*, brownish within and with a broad, dark, opaque zone next to the substratum, place this species in the *P. cinerea* group. It is remarkable by having, in addition to the ordinary kind of cystidia, very much larger cystidia which finally become, by the accretions of mineral matter, very large masses of mineral nature with very coarse grains on the exterior of the mass. In the Cuban gathering which I have referred to this species, when a small portion of the hymenial surface was moistened with alcohol and then with water preparatory to removal of a bit of the fructification for sectioning, the moist hymenium became punctate with minute depressions, probably by presence at those points of the large buried cystidia. This may prove a useful test for preliminary sorting out, without examination by the microscope, of the rare *P. carnea* from the more common *P. cinerea* of nearly similar aspect. *P. heterocystidia* has cystidia of two kinds, like those of *P. carnea* but thicker, readily separable from the substratum when moistened, and with a narrow brown zone in the middle of its sectional preparations and with a loosely interwoven hyaline zone next to the substratum. The specimen in Kew Herbarium, collected on fir in the Sierra Nevada Mountains, California, by Harkness, 1025, and referred by Cooke to *P. cinerea* does not have the large cystidia of his type and is *P. cinerea* instead.

Specimens examined:

Texas: Galveston Bay, *H. W. Ravenel, 78*, type (in Kew Herb.).

Cuba: San Diego de los Baños, Pinar del Rio Province, *Earle & Murrill, 333*, comm. by N. Y. Bot. Gard. Herb.

SPECIES TOO INCOMPLETELY DESCRIBED FOR LOCATION AMONG PRECEDING SPECIES

Peniophora convolvens Bresadola, Ann. Myc. **18**: 48. 1920.

"Elongato-effusa, ceraceo-membranacea, pallida vel avellanea, ambitu similari, demum libero-convoluto; hymenio demum late rimoso, interstitiis fibrillosis; sporis hyalinis, obovatis, 6–7 × 5–6 μ; basidiis clavatis, 40–45 × 6–7 μ; cystidiis saepe immersis vel usque ad 45 μ prominentibus, 9–12 μ crassis.

"Hab. ad ligna, St. Croix, Americae centralis. *Raunkiaer*."

P. gigaspora Massee, Linn. Soc. Bot. Jour. **25**: 152. 1889; Sacc. Syll. Fung. **9**: 238. 1891.

"Latissime effusa, ambitu fimbriata albicans; hymenio pallido, velutino, sicco indurato, contiguo; cystidia fusoidea, 80–120 × 30–40 μ; sporae oblongo-ellipsoideae, 18–20 × 10 μ.

"N. Providence, Bahamas.

"On decorticated wood, forming thin, continuous, broadly effused patches, somewhat resembling *P. velutina*, but differing in cystidia and spores."

(To be concluded)

INDEX TO SPECIES OF PENIOPHORA

	Page
admirabilis	304
Aegerita	226
aemulans	308
affinis	266
alba	297
albofarcta	228
albo-straminea	305
albugo	231
albula	231
Allescheri	301
alutaria	332
amoena	276
arachnoidea	220
argentea	346
asperipilata	230
aurantiaca	310
borealis	295
Burkei	282
Burtii	278
caesia	353
cana	227
canadensis	260
candida	226
carnea	354
carnosa	325
cinerea	348
citrinella	327
coccineo-fulva	253
colorea	343
convolvens	355
crassa	286
cremea	261
decorticans	344
disciformis var. *borealis*	295
duplex	298
exigua	224
exilis	239
Farlowii	343
filamentosa	320
firma	276
flammea	252
flavido-alba	248
fusca	244
fusco-marginata	335
galochroa	222
gigantea	216
gigaspora	356
gilvidula	245
glebulosa	282
globifera	219
guttulifera	247
heterocystidia	293
hiulca	272
humifaciens	225
incarnata	307
inconspicua	221
inflata	267
investiens	307
irregularis	228
isabellina	253
Karstenii	254, 286
Kauffmanii	296
laevigata	338
laevis	257
laminata	246
laxa	224
lepida	296
leprosa	254
lilacina	348
limonia	275
livida	239
longispora	229
ludoviciana	244

	Page
magnahypha	238
martiana	330
medioburiensis	328
mexicana	243
miniata	277
Molleriana	270
montana	237
mutata	299
nuda	345
ochracea	345
odontioides	223
odorata	289
Peckii	291
pertenuis	315
phosphorescens	273
phyllophila	241
pilisela	242
pilosa	291
praetermissa	316
pruinata	340
pubera	313
pubera f. *villosa*	313
Ravenelii	269
rhodella	254
rhodochroa	254
rimosissima	341
Roumeguerii	270
Sacchari	328
Sambuci	233
sanguinea	274
separans	332
septocystidia	260
serialis	318
Seymouriana	337
Sheari	268
similis	336
sordida	280
stratosa	333
subalutacea	288
subapiculata	280
subcremea	303
subiculosa	259
subsulphurea	329
sulphurina	324
tabacina	334
Taxodii	306
tenella	298
tenuis	317
tephra	339
terricola	237
texana	251
Thujae	236
typhicola	319
unicolor	320
velutina	264
vernicosa	250
versata	305
verticillata	285
violaceo-livida	347
viticola	322
Weiri	342
zonata	245